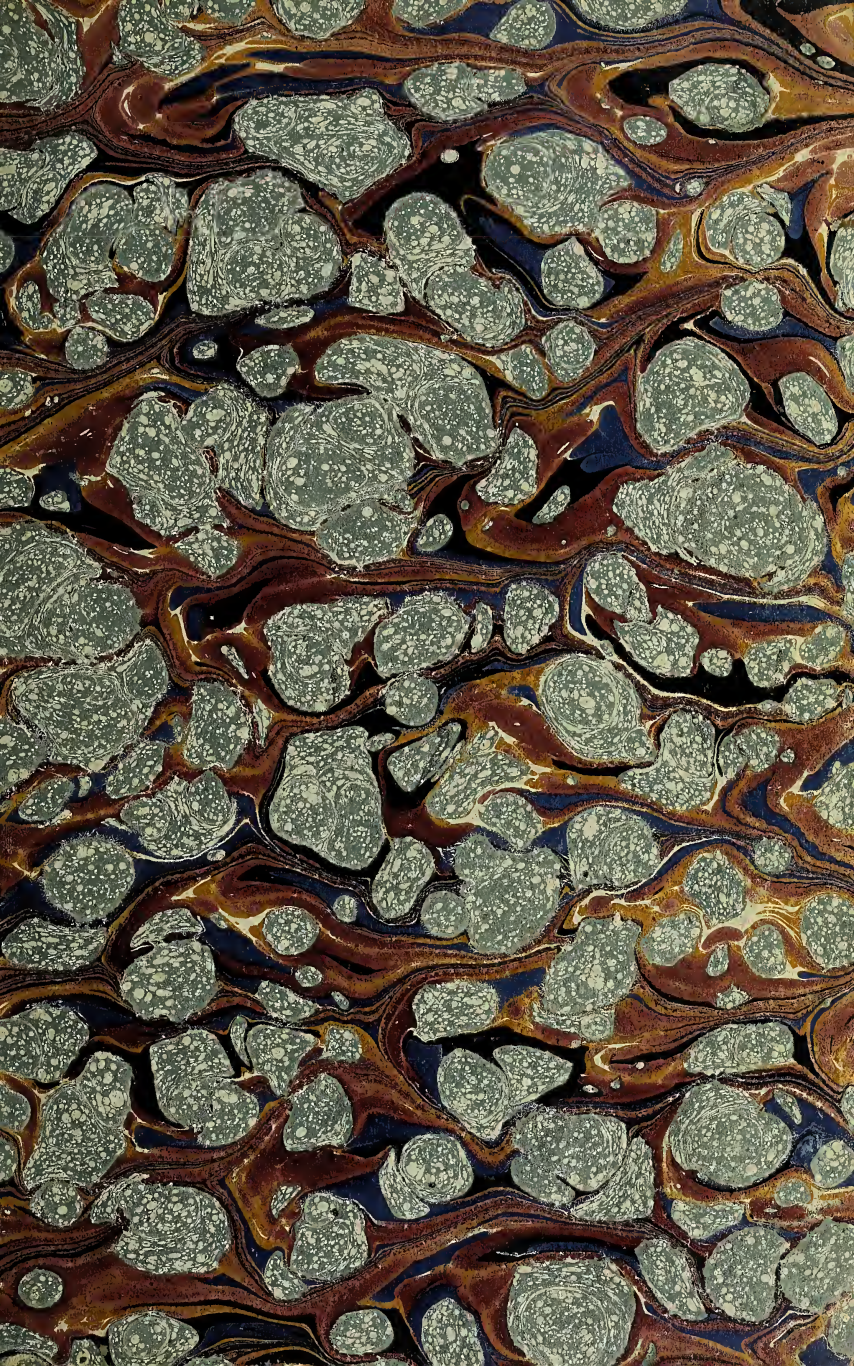






GARDNER RAND.



BIRDS OF AMERICA.

THE
BIRDS OF AMERICA,

FROM
DRAWINGS MADE IN THE UNITED STATES
AND THEIR TERRITORIES.

BY
JOHN JAMES AUDUBON, F.R.S., &c., &c.

VOL. VIII.

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BIRDS OF AMERICA.

GENUS III.—LARUS, *Linn.* GULL.

Bill shorter than the head, nearly straight, moderately stout, compressed; upper mandible with its dorsal outline straight to the middle, then decurved, the ridge convex, the sides rapidly sloping, the edges sharp and direct, the tip rather obtuse; nasal groove rather long and narrow; nostrils sub-medial, longitudinal, linear-oblong, broader anteriorly; lower mandible with the angle long and pointed, the outline of its crura decurved anteriorly, that of the ridge slightly concave and ascending, the sides erect, the edge-line decurved toward the tip, which is narrow but obtuse. Head of moderate size, broadly ovate; neck of ordinary length; body compact. Feet rather long or of moderate length, rather stout; tibia bare at the lower part; tarsus moderately compressed, with numerous curved anterior scutella, and smaller behind; toes slender, of moderate length, scutellate; first very small, third a little longer than fourth. Claws small, slightly arched, compressed, rather

biunt. Plumage close, soft, blended, on the back and wings rather compact. Wings very long, pointed; first and second quills longest; secondaries broad, the inner more elongated. Tail of moderate length, generally even, rarely rounded or emarginate, of twelve feathers. In those which have the head white in summer, it is streaked with dusky in winter; and those which are hooded in summer, have the head white and slightly streaked in winter.

THE FORKED-TAILED GULL.

LARUS SABINI, *Sabine*.

PLATE CCXCXI—MALE.

On my return from Labrador, I had the pleasure of seeing this interesting little Gull flying over the harbour of Halifax in Nova Scotia. It was in company with our Common American Gull. Although I have not observed it on our eastern shores or farther south on the coast, it is not improbable that it rambles there in winter along with other species which, like itself, breed far north. Its flight in some measure resembles that of the Common Tern, although it is more decided, and, consequently, more like that of the smaller species of its own genus. In the course of a voyage from Pictou in Nova Scotia to Hull in England, lately performed by my friend Mr. THOMAS MACCULLOCH, he saw great numbers of this species when more than a hundred miles off Newfoundland. They flew around the ship in company with an almost equal number of Ross' Gull.

Dr. RICHARDSON gives the following account of the Forked-tailed Gull, in the *Fauna Boreali-Americana*. "This interesting species of Gull was discovered by Captain EDWARD SABINE. It was first seen, on the 25th of July at its breeding station on some low rocky islands lying off the west coast of Greenland, associated in considerable numbers with the Arctic Tern, the nests of both birds being intermingled. It is analogous to the Tern not only in its forked tail, and in its choice of a breeding place, but also in the boldness which it displays in the protection of its young. The parent birds flew with impetuosity towards persons approaching their nests, and when one was killed, its mate, though frequently fired at, continued on the wing close to the spot. They were observed to get their food on the sea-beach,



Fork-tailed Gull

Drawn from Nature by J.J. Audubon, F.R.S.L.S.

Male

Lith^d Printed & Col^d by J. T. Bowen, Philad^a.

standing near the water's edge, and picking up the marine insects which were cast on shore. A solitary individual was seen in Prince Regent's Inlet, on Sir EDWARD PARRY's first voyage, and many specimens were procured in the course of the second voyage on Melville Peninsula. Captain SABINE also killed a pair at Spitzbergen, so that it is a pretty general summer visitor to the Arctic Seas, and is entitled to be enumerated amongst the European as well as the American birds. It arrives in the high northern latitudes in June, and retires to the southward in August. Specimens procured in June and July corresponded exactly with the one described below. When newly killed, they all had a delicate pink blush on their under plumage. The eggs, two in number, are deposited on the bare ground, and are hatched in the last week of July. They are an inch and a half in length, and have an olive colour with many brown blotches."

At the approach of autumn, it frequently happens that several species of Gulls associate together, and at times congregate in great numbers on the outer margins of sand-bars and in the large estuaries. There they keep up a constant cackling, run about, dress their plumage, and await the rising of the waters. If disturbed at such times, they show greater shyness than perhaps at any other. One of the oldest birds sounds an alarm, and all simultaneously take to wing, disperse, and gradually rise to a great elevation, flying in wide circles, and moving seaward. I have thought it remarkable that these birds seldom shun the fishermen, while towards any one bearing the semblance of a gunner they act with extreme caution. Although loquacious when congregated, they are, when separated, quite silent, especially when on wing. In squally and rainy weather they skim low over the water or the land, always against the wind. They are very tenacious of life, and often, when wounded, revive after you had considered them incapable of breathing. The instant they are caught they are wont to mute and eject the contents of their stomach, as well as when suddenly compelled to take to wing, or when pursued by predaceous birds. In particular states of the weather they appear at a distance much larger than they really are, and, on such occasions, they also seem much nearer, so that the gunner is greatly deceived, and may shoot at them when too far off.

LARUS SABINI, *Fork-tailed Gull*, Swains. and Rich. F. Bor. Amer., vol. ii. p. 428.

FORK-TAILED GULL, Nutt. Man., vol. ii. p. 295.

FORKED-TAILED GULL, *Larus Sabini*, Aud. Orn. Biog., vol. iii. p. 561.

Male, 13, 33.

Accidental as far south in winter as New York. Rather common along the coast of Nova Scotia. Breeds in Newfoundland, and along the coasts of the Arctic Seas. Seen on the banks of Newfoundland in great numbers.

Adult Male.

Bill rather shorter than the head, nearly straight, rather slender, compressed. Upper mandible with its dorsal line straight to the middle, then curved and declinate, the ridge convex, the sides slightly convex, the edges sharp and inflected, the tip rather obtuse. Nasal groove rather long and narrow; nostrils in its fore part, longitudinal, sub-medial, linear, pervious. Lower mandible with a slight prominence at the end of the angle, which is long and narrow, the dorsal line then straight or slightly concave, the ridge convex, the sides nearly flat.

Head of moderate size. Neck short. Body rather slender. Wings very long. Feet of moderate length, rather strong; tibia bare below for a short space, covered behind with narrow scutella; tarsus compressed, anteriorly covered with numerous scutella and three inferior series of transverse scales, laterally with rounded scales, posteriorly with oblique scutella. Toes slender, scutellate above; first extremely small, second much shorter than fourth, third longest, anterior toes connected by reticulated webs, the outer and inner slightly marginate; claws small, compressed, obtuse, that of middle toe with an expanded inner edge.

Plumage close, soft, blended. Wings very long and pointed; primaries tapering and rounded, first longest, second almost equal, the rest rapidly graduated; secondaries obliquely pointed, the rounded extremity extending beyond the tip of the shaft, which is exterior to it, the inner feathers more elongated. Tail of moderate length, forked, of twelve feathers.

Bill black at the base for more than half its length, the rest pure yellow. Edges of eyelids vermilion, as is the inside of the mouth. Feet black. Head and upper part of neck all round blackish-grey, that colour terminated below by a ring of pure black encircling the neck. Lower neck all round, the whole lower surface, the upper tail-coverts and the tail, pure white. The back and wings are bluish-grey, excepting a large terminal portion of the secondaries, and the tips of the primaries, which are white, the primaries themselves being black, with their shafts brownish-black. The first quill of the specimen figured had no white on the tip, but some individuals differ in this respect.

Length to end of tail 13 inches, to end of wings $14\frac{3}{4}$; extent of wings 33; wing from flexure $10\frac{3}{4}$; tail 5; bill along the ridge 1, along the edges $1\frac{1}{4}$; tarsus $1\frac{5}{8}$; middle toe 1, its claw $\frac{2}{8}$. Weight 7 oz.

The Female is rather less than the male, but in other respects similar.

ROSS' GULL.

LARUS ROSSII, *Richardson.*

(NOT FIGURED.)

Not having met with this beautiful little Gull, I am obliged to refer to Dr RICHARDSON's description of it in the Fauna Boreali-Americana.

"Cuneate-tailed Gull, with a pearl-grey mantle. Wings longer than the cuneiform tail. The outer web of the first tail-feather blackish; a slender black bill, tarsi an inch long, and, as well as the feet, vermilion red.

"Two specimens of this Gull were killed on the coast of Melville Peninsula, on Sir EDWARD PARRY's second voyage, one of which is preserved in the Museum of the University of Edinburgh, and the other was presented to JOSEPH SABINE, Esq. No other examples are known to exist in collections; but Commander ROSS, in his Zoological Appendix to Sir EDWARD PARRY's narrative of his most adventurous boat-voyage towards the Pole, relates that several were seen during the journey over the ice north of Spitzbergen, and that Lieutenant FORSTER also found the species in Waygait Straits, which is probably one of its breeding places. It is to Commander ROSS, who killed the first specimen which was obtained, that the species is dedicated, as a tribute for his unwearied exertions in the promotion of natural history on the late Arctic voyages, in all of which he bore a part. Of the peculiar habits or winter retreat of this species nothing is known.

"Description of a specimen killed, June 1823, at Alagnak, Melville Peninsula, lat. $69\frac{1}{4}^{\circ}$ N.

"Colour.—Scapulars, inter-scapulars, and both surfaces of the wings clear pearl-grey; outer web of the first quill blackish-brown to the tip, which is grey; tips of the scapulars and lesser quills whitish. Some small feathers near the eye, and a collar round the middle of the neck pitch black; rest of the plumage white. The neck above and the whole under plumage deeply tinged with peach-blossom, red in recent specimens. Bill black; its rectus and the edges of the eyelids reddish-orange. Legs and feet vermilion-red, nails blackish.

"Form.—Bill slender, weak, with a scarcely perceptible salient angle beneath; the upper mandible slightly arched and compressed towards the point; the commissure slightly curved at the tip. Wings an inch longer

than the decidedly cuneiform tail, of which the central feathers are an inch longer than the lateral. Tarsi rather stout; the thumb very distinct, armed with a nail as large as that of the outer toe.

"The other specimen killed by Mr. SHERER a few days later, differs only in the first primary coverts having the same dark colour with the outer web of the first primary itself.

"Length to end of tail 14 inches; tail $5\frac{1}{2}$; wing $10\frac{1}{2}$; bill along the ridge $\frac{3}{4}$; rictus $1\frac{1}{4}$; from nostril to tip of bill $4\frac{1}{2}$; tarsus $1\frac{1}{2}$; middle toe $10\frac{1}{2}$; its nail $\frac{3}{4}$.

LARUS ROSSII, *Cuneate-tailed Gull*, Swains. and Rich. F. Bor. Amer., vol. ii. p. 427.
ROSS' GULL, *Larus Rossii*, Aud. Orn. Biog., vol. v. p. 324.

Adult, 14; wing $10\frac{1}{2}$.

Arctic Seas.

BONAPARTE'S GULL.

LARUS BONAPARTII, *Richardson*.

PLATE CCCCXLII.—MALE, FEMALE, AND YOUNG.

My first acquaintance with this species took place whilst I was at Cincinnati, in the beginning of August, 1819. I was crossing the Ohio, along with Mr. ROBERT BEST, then curator of the Cincinnati Museum, for the purpose of visiting the Cliff Swallows which had taken up their abode on the walls of the garrison on the Kentucky side, when we observed two Gulls sweeping gracefully over the tranquil waters. Now they would alight side by side, as if intent on holding a close conversation; then they would rise on wing and range about, looking downwards with sidelong glances, searching for small fishes, or perhaps eyeing the bits of garbage that floated on the surface. We watched them for nearly half an hour, and having learned something of their manners, shot one, which happened to be a female. On her dropping, her mate almost immediately alighted beside her, and was shot. There, side by side, as in life, so in death, floated the lovely birds. One, having a dark bluish nearly black head, was found to be the male; the



Bonapartes Gull

1. Male in Spring. - 2. Female. - 3. Young first Autumn.

Engr. by J. T. Bowen. Plated.

other, with a brown head, was a female. On the 12th of November, 1820, I shot one a few miles below the mouth of the Arkansas, on the Mississippi, which corresponded in all respects with the male just mentioned.

No sooner do the shad and old-wives enter the bays and rivers of our Middle Districts, than this Gull begins to shew itself on the coast, following these fishes as if dependent upon them for support, which however is not the case, for at the time when these inhabitants of the deep deposit their spawn in our waters, the Gull has advanced beyond the eastern limits of the United States. However, after the first of April, thousands of Bonapartian Gulls are seen gambolling over the waters of Chesapeake Bay, and proceeding eastward, keeping pace with the shoals of fishes.

During my stay at Eastport, in Maine, in May, 1833, these Gulls were to be seen in vast numbers in the harbour of Passamaquoddy at high water, and in equal quantities at low water on all the sand and mud-bars in the neighbourhood. They were extremely gentle, scarcely heeded us, and flew around our boats so close that any number might have been procured. My son JOHN shot seventeen of them at a single discharge of his double-barrelled gun, but all of them proved to be young birds of the preceding year. On examining these specimens, we found no development of the ovaries in several, which, from their smaller size, we supposed to be females, nor any enlargement of the testes in the males; and as these young birds kept apart from those which had brown and black hoods, I concluded that they would not breed until the following spring. Their stomachs were filled with *coleopterous insects*, which they caught on the wing, or picked up from the water, into which they fell in great numbers when overtaken by a cold fog, while attempting to cross the bay. On the 24th of August, 1831, when at Eastport with my family, I shot ten of these Gulls. The adult birds had already lost their dark hood, and the young were in fine plumage. In the stomach of all were shrimps, very small fishes, and fat substances. The old birds were still in pairs.

When exploring the Bay of Fundy, in May, 1833, I was assured by the captain and sailors, as well as the intelligent pilot of the revenue tender Nancy, that this Gull bred in great abundance on the islands off Grand Manan; but unfortunately I was unable to certify the fact, as I set out for Labrador previous to the time at which they breed in that part of the country. None of them were observed on any part of the Gulf of St. Lawrence, or on the coast of Labrador or Newfoundland. In winter this species is common in the harbour of Charleston, but none are seen at that season near the mouths of the Mississippi.

The flight of this Gull is light, elevated, and rapid, resembling in buoyancy that of some of our Terns more than that of most of our Gulls, which move

their wings more sedately. I found the adult birds in moult in August. Although their notes are different from those of all our other species, being shriller and more frequent, I am unable to represent them intelligibly by words.

Since I began to study the habits of Gulls, and observe their changes of plumage, whether at the approach of the love season, or in autumn, I have thought that the dark tint of their hoods was in the first instance caused by the extremities of the feathers then gradually changing from white to black or brown, without the actual renewal of the feathers themselves, as happens in some species of land-birds. At Eastport, I had frequent opportunities of seeing the black-hooded males copulating with the brown-hooded females, so that the colour of the head in the summer season is really distinctive of the sexes. I found in London a pair of these birds, of which the sexes were distinguished by the colour of the head, and which had been brought from Greenland. They were forwarded by me to the Earl of DERBY, in whose aviaries they are probably still to be seen.

This is certainly the species described in the Fauna Boreali-Americana under the same name; but it is there stated that the females agree precisely with the males, their hood being therefore "greyish-black;" which I have never found to be the case. As to the *Larus capistratus* of Bonaparte's Synopsis, I have nowhere met with a Brown-headed Gull having the tail "sub-emarginate;" and I infer that the bird described by him under that name is merely the female of the present species.

BROWN-MASKED GULL, *Larus capistratus*, Bonap. Amer. Orn., vol. iv. Female.

LARUS CAPISTRATUS, Bonap. Syn., p. 358.

LARUS BONAPARTII, *Bonapartian Gull*, Swains. and Rich. F. Bor. Amer., vol. ii. p. 425.

BONAPARTIAN GULL, Nutt. Man., vol. ii. p. 294.

BONAPARTIAN GULL, *Larus Bonapartii*, Aud. Orn. Biog., vol. iv. p. 212.

Adult, 14 $\frac{1}{8}$, 32 $\frac{1}{4}$.

Extremely abundant in winter, on the coast of Florida. Equally plentiful in spring, along the coasts of the Middle and Eastern Districts, especially in the Chesapeake. Breeds from the Bay of Fundy to high latitudes. Not uncommon in autumn, on the Great Lakes, and the Ohio and Mississippi.

Adult Male in spring plumage.

Bill shorter than the head, nearly straight, slender, compressed. Upper mandible with its dorsal line straight to the middle, then curved and declinate, the ridge narrow, the sides slightly convex, the edges sharp and a little inflected, the tips narrow but rather obtuse, with a slight notch on each side. Nasal groove rather long and narrow; nostrils in its fore part, longitudinal, sub-medial, linear, pervious. Lower mandible with a slight

prominence at the end of the angle, which is long and narrow, the dorsal line then ascending and slightly concave, the ridge convex, the sides nearly erect and flattened.

Head of moderate size, ovate, narrowed anteriorly, convex above. Eyes of moderate size. Neck rather short. Body rather slender. Wings very long. Feet of moderate length, rather strong; tibia bare below for a short space, covered behind with narrow scutella; tarsus compressed, anteriorly covered with numerous scutella and three inferior series of transverse scales, laterally with oblong scales, posteriorly with oblique scutella. Toes slender, with numerous scutella; first extremely small, second considerably shorter than fourth, third longest; anterior toes connected by reticulated webs, of which the anterior margins are deeply concave, the outer and inner slightly marginate. Claws small, compressed, moderately arched, rather obtuse, that of middle toe with an expanded inner edge.

Plumage full, close, soft, blended. Wings very long and pointed; primaries tapering and rounded, first longest, second very little shorter, the rest rapidly graduated; secondaries obliquely pointed, the rounded extremity extending beyond the tip of the shaft, which is exterior to it, the inner feathers more elongated. Tail of moderate length, almost even, the middle feathers slightly longer.

Bill black, inside of mouth vermilion. Iris reddish-hazel. Feet orange, slightly tinged with vermilion; claws dusky brown. Head and upper part of neck all round, greyish-black, that colour extending half an inch lower on the throat than on the occiput. A white band divided by a narrow black line margining the eye behind; the remaining part of the neck white; back, scapulars and wings, light greyish-blue. The anterior ridge of the wing, alula, smaller coverts on the carpal margin, four outer primary coverts, shaft and inner web of the outer primary, both webs of second, inner webs of third and fourth, white; of which colour also are the rump, tail, and all the lower parts. Outer web of first quill, excepting a small portion towards the end, its tip to the length of half an inch, black, as are the ends of the next six, which however have a small tip of white, the black on some of them about an inch long, and running along the inner ridge to a considerable extent.

Length to end of tail $14\frac{1}{8}$ inches, to end of wings $15\frac{3}{8}$, to end of claws $13\frac{1}{8}$; extent of wings $32\frac{1}{4}$; wing from flexure $10\frac{3}{4}$; tail $4\frac{7}{8}$; bill along the ridge $1\frac{1}{2}$, along the edge of lower mandible $1\frac{9}{16}$; tarsus $1\frac{1}{2}$; hind toe and claw $\frac{3}{4}$; middle toe $1\frac{3}{8}$, its claw $\frac{1}{4}$; outer toe $1\frac{1}{2}$, its claw $\frac{3}{8}$; inner toe $\frac{1}{2}$, its claw $\frac{1}{8}$. Weight $6\frac{1}{2}$ oz.

Adult Female.

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The female is somewhat smaller, and resembles the male, but has the head and upper part of the neck umber-brown.

Young in December.

Bill greyish-black, iris dark brown; feet flesh-coloured, claws dusky. Head and neck greyish-white; a small black patch about an inch behind the eye on each side. Upper parts dull bluish-grey, many of the wing-coverts greyish-brown, edged with paler; quills as in the adult; rump and tail white, the latter with a broad band of black at the end, the tips narrowly edged with whitish.

Length to end of tail $13\frac{3}{4}$, to end of wings $15\frac{3}{4}$, to end of claws 13; extent of wings $32\frac{1}{2}$ inches. Weight 6 oz.

The white spots on the tips of the wings vary greatly in size, and are frequently obliterated when the feathers become worn.

Palate with five series of small distant papillæ. Tongue 1 inch $1\frac{1}{2}$ twelfths long, slender, tapering to a slit point, emarginate and papillate at the base, horny towards the end. Aperture of posterior nares linear, 9 twelfths long. Heart 1 inch long, 9 twelfths broad. Right lobe of liver 1 inch 11 twelfths long, the other lobe 1 inch 7 twelfths.

The œsophagus is $6\frac{1}{2}$ inches long, very wide, with rather thin parietes, its average diameter when dilated 10 twelfths, within the thorax enlarged to 1 inch 2 twelfths. The transverse muscular fibres are distinct, the internal longitudinal less so; the mucous coat longitudinally plicate. The proventriculus is $\frac{1}{2}$ inch long, with very numerous small glandules. The stomach is a small oblong gizzard, 10 twelfths long, 8 twelfths broad; its lateral muscles rather large, as are its tendons. The inner coat or epithelium is of moderate thickness, dense, with nine longitudinal broad rugæ, and of a brownish-red colour. The intestine is $24\frac{1}{2}$ inches long, its diameter 2 twelfths. The rectum is $1\frac{1}{2}$ inches long. The cœca are 2 twelfths long, 1 twelfth in diameter, cylindrical and obtuse.

The intestine of another individual, a male, is $20\frac{1}{2}$ inches long, 3 twelfths in diameter.

The trachea is 3 inches 10 twelfths long, its diameter at the top 3 twelfths, at the lower part $2\frac{1}{2}$ twelfths, the rings very feeble, unossified, about 130 in number. The sterno-tracheal muscles are very slender, as are the contractors; and there is a pair of inferior laryngeals. The bronchi are of moderate length, with about 18 half rings.



Black-headed Gull.

1. Adult Male Spring Plumage 2. Young first Autumn.

Drawn from Nature by J. Audubon FRSELS

Light Printed & Col'd by J. T. Bowen Philad.^a

BLACK-HEADED, OR LAUGHING GULL.

LARUS ATRICILLA, *Linn*

PLATE CCCXLIII.—MALE IN SPRING, AND YOUNG.

Much confusion appears to exist among authors regarding our Laughing Gull, and this, in my humble opinion, simply because not one of them has studied it, in its native haunts, and at all seasons, since the period when it was briefly characterized by our great master LINNÆUS, who, after all that has been said against him, has not yet had his equal. ALEXANDER WILSON, who, it seems, knew something of the habits of this bird, thought it however identical with the *Larus ridibundus* of Europe, as is shewn by the synonymes which he has given. Others, who only examined some dried skins, without knowing so much as the day or even the year in which they had been shot, or their sex, or whether the feathers before them had once belonged to a bird that was breeding, or barren, when it was procured, described its remains perhaps well enough for their own purpose, but certainly not with all the accuracy which is necessary to establish once and for ever a distinct species of bird. Others, not at all aware that most Gulls, and the present species in particular, assume, in the season of pairing, and in a portion of the breeding time, beautiful rosy tints in certain parts of their plumage, which at other periods are pure white, have thought that differences of this sort, joined to those of the differently-sized white spots observable in particular specimens, and not corresponding with the like markings in other birds of the same size and form, more or less observable at different periods on the tips of the quills, were quite sufficient to prove that the young bird, and the breeding bird, and the barren bird, of one and the same species, differed specifically from the old bird, or the winter-plumage bird. But, reader, let us come to the point at once.

At the approach of the breeding season, or, as I like best to term it, the love season, this species becomes first hooded, and the white feathers of its breast, and those of the lower surface of its wings, assume a rich blush of roseate tint. If the birds procured at that time are several years old and perfect in their powers of reproduction, which is easily ascertained on the spot, their primary quills shew little or no white at their extremities, and their hood descends about three quarters of an inch lower on the throat than

on the hind part of the head, provided the bird be a male. But should they be barren birds, *the hood will be wanting*, that portion of their plumage remaining as during winter, and although the primaries will be black, or nearly so, each of them will be broadly tipped, or marked at the end, with a white spot, which in some instances will be found to be fully half an inch in size; yet the tail of these birds, as if to prove that they are adults, is as purely white to its extreme tip, as in those that are breeding; but neither the breast, nor the under wing-coverts, will exhibit the rosy tint of one in the full perfection of its powers.

The males of all the Gulls with which I am acquainted, are larger than the females; and this difference of size is observable in the young birds even before they are fully fledged. In all of these, however, putting aside their sex, I have found great differences of size to exist, sometimes as much as two inches in length, with proportional differences in the bills, tarsi, and toes; and this, in specimens procured from one flock of these Gulls at a single discharge of the gun, and at different seasons of the year. The colour of their bills too is far from being always alike, being brownish-red in some, purplish or of a rich and deep carmine in others. As to the white spots on the extremities of the primary quills of birds of this family, I would have you, reader, never to consider them as affording essential characters. Nay, if you neglect them altogether, you will save yourself much trouble, as they will only mislead you by their interminable changes, and you may see that the spots on one wing are sometimes different in size and number from those on the other wing of the same specimen. If all this be correct, as I assure you it must be, being the result of numberless observations made in the course of many years, in the very places of resort of our different Gulls, will you not agree with me, reader, that the difficulty of distinguishing two very nearly allied species must be almost insuperable when one has nothing better than a few dried skins for objects of observation and comparison?

The Black-headed Gull may be said to be a constant resident along the southern coast of the United States, from South Carolina to the Sabine river; and I have found it abundant over all that extent both in winter and in summer, but more especially on the shores and keys of the Floridas, where I found it breeding, as well as on some islands in the Bay of Galveston in Texas. A very great number of these birds however remove, at the approach of spring, towards the Middle and Eastern Districts, along the shores of which they breed in considerable numbers, particularly on those of New Jersey and Long Island, as well as on several islands in the Sound. They constantly evince a dislike to rocky shores, and therefore are seldom seen beyond Massachusetts, in which state indeed they are exceedingly rare.

None were observed by any members of my party on the Magdalene

Islands, or on the coasts of Labrador or Newfoundland. I never met with any of them on the Mississippi above New Orleans, although they are plentiful in that neighbourhood during winter, and until the breeding season commences; and I think that this species never travels beyond the influence of the tide-waters of any stream. WILSON, in speaking of it, says that it is seen on the newly ploughed fields, and around the houses of the farmers of New Jersey; but the habit of visiting ploughed grounds I have not observed in any one of the American Gulls, although I have frequently noticed it in some of the European species, particularly *Larus canus*, *L. ridibundus*, and *L. argentatus*.

At all periods of the year, the Black-headed Gulls keep in flocks formed of many families; and in the breeding season, or even as soon as their courtships have commenced, they assemble by hundreds of pairs, or even by thousands. At this time they are so clamorous as to stun your ear with their laughing-like cries, though at other seasons they are generally silent, unless when suddenly alarmed, or when chased by the Jager. Their loves are conducted with extreme pomposity; they strut and bow to the females, throwing their head backwards, like all other Gulls, although in a less degree and with a less curious motion than Cormorants. You see them first stretching their heads forwards; then, with open bill, vibrating tongue, and eyes all glowing, they emit their loud laughing notes, which in a general sense resemble those of many other species, though they are not precisely similar to those of any. But before I proceed with my account of their manners, I will give you the result of some curious observations which I made on them in Florida.

Previously to my visit to that interesting peninsula, I had not unfrequently noticed indications of strong amatory propensities in several species of Gulls, but never to the extent exhibited by the present species, many of which I saw copulating in the latter part of autumn and in winter, fully three months before the usual time of depositing their eggs in that country. Similar observations were made on *Larus argentatus*, on the coast of Maine, and on *Larus marinus*, in the Bay of Fundy. Nay, even in Europe I have seen this extraordinary tendency to reproduce out of season, as it were. On some such occasions, when I was at St. Augustine, in the month of December, I have observed four or five males of the present species paying their addresses to one female, who received their courtesies with evident welcome. Yet the females in that country did not deposit eggs until the 20th day of April. The most surprising fact of all was, that, although these birds were paired, and copulated regularly, by the 1st of February, not one had acquired the spring or summer plumage, or the dark coloured hood, or the rosy tint of the breast, nor lost the white spots on the tips of their primary quills.

This change, however, was apparent by the 5th of March, became daily stronger, and was perfected by the 15th of that month. A few exceptions occurred among the numbers procured at these periods, but the generality of the birds were as above described.

While at Great Egg Harbour, in May, 1829, shortly after my return from England, I found this species breeding in great numbers on the margins of a vast salt marsh, bordering the sea-shore, though separated from the Atlantic by a long and narrow island. About sunrise every morning, an immense number of these birds would rise in the air, as if by common consent, and wing their way across the land, probably intent on reaching the lower shores of the Delaware river, or indeed farther towards the head waters of Chesapeake Bay. They formed themselves into long straggling lines, following each other singly, at the distance of a few yards. About an hour before sunset, the same birds were seen returning in an extended front, now all silent, although in the morning their cries were incessant, and lasted until they were out of sight. On arriving at the breeding-ground, they immediately settled upon their nests. On a few occasions, when it rained and blew hard, the numbers that left the nests were comparatively few, and those, as I thought, mostly males. Instead of travelling high, as they were wont to do in fair and calm weather, they skimmed closely over the land, contending with the wind with surprising pertinacity, and successfully too. At such times they were also quite silent. I now and then observed some of them whilst on wing, and at a considerable height, suddenly check their course, as if to examine some object below; but on none of these occasions did I see one attempt to alight, for it soon resumed its wonted course, and rejoined its companions.

Now, reader, though I am growing old, I yet feel desirous of acquiring knowledge regarding the habits of our birds, and should much like to learn from you the reasons why these Gulls went off in lines from their breeding-grounds, and returned in an extended front? Was it, in the latter case, because they were afraid of passing their nests unknowingly; or, in the former, under the necessity of following an experienced leader, who, under the stimulus of an empty maw, readily undertook the office, but who, like many other bon-vivants, became in the evening too dull to be of use to his companions?

This species breeds, according to the latitude, from the 1st of March to the middle of June; and I have thought that on the Tortuga Keys, it produced two broods each season. In New Jersey, and farther to the eastward, the nest resembles that of the Ring-billed Gull, or Common American Gull, *Larus zonorhynchus*, being formed of dried sea-weeds and land plants, two and sometimes three inches high, with a regular rounded

cavity, from four and a half to five inches in diameter, and an inch and a half in depth. This cavity is formed of finer grasses, placed in a pretty regular circular form. I once found a nest formed as it were of two; that is to say, two pairs had formed a nest of nearly double the ordinary size, and the two birds sat close to each other during rainy weather, but separately, each on its own three eggs. I observed that the males, as well as the females, thus concerned in this new sort of partnership, evinced as much mutual fondness as if they were brothers. On the Tortugas, where these Gulls also breed in abundance, I found their eggs deposited in slight hollows scooped in the sand. Whilst at Galveston, in Texas, I found their nests somewhat less bulky than in the Jerseys, which proved to me how much birds are guided in these matters by differences in atmospheric temperature and locality.

I never found more than three eggs in a nest. Their average length is two inches and half an eighth, their greatest breadth a trifle more than an inch and a half. They vary somewhat in their general tint, but are usually of a light earthy olive, blotched and spotted with dull reddish-brown and some black, the markings rather more abundant towards the larger end. As an article of food, they are excellent. These Gulls are extremely anxious about their eggs, as well as their young, which are apt to wander away from the nest while yet quite small. They are able to fly at the end of six weeks, and soon after this are abandoned by their parents, when the old and young birds keep apart in flocks until the following spring, when I think the latter nearly attain the plumage of their parents, though they are still smaller, and have the terminal band on the tail.

The Black-headed Gull frequently associates with the Razor-billed Shearwater, *Rhynchops nigra*, in winter; and I can safely say that I have seen more than a thousand of each kind alight on the same points of estuaries and mouths of rivers; the Gulls standing or sitting by themselves, at no great distance from the Razor-bills. Now and then they would all suddenly rise on wing as if frightened, perform a few evolutions in the air, and again settle on the very same spot, still, however, keeping separate. While thus in the company of the Razor-bills, the Gulls are with great difficulty approached, the former being exceedingly wary, and almost always rising when a person draws near, the Gulls immediately following them, and the two great flocks making off to some distant point, generally not very accessible. If taken up on being wounded, these Gulls are apt to bite severely. If, on being shot at, they fall on the water, they swim fast and lightly, their companions all the while soaring above, and plunging towards them, as if intent on rescuing them. This great sympathy often proves fatal to them, for, if the gunner is

inclined, he may shoot them down without any difficulty, and the more he kills the more his chances are increased.

On the 10th of May, 1832, it was my good fortune to be snugly on board the "Lady of the Green Mantle," or, in other words, the fine revenue cutter Marion. The Gulls that laughed whilst our anchors were swiftly descending towards the marvellous productions of the deep, soon had occasion to be sorrowful enough. As they were in great numbers, officers and men, as well as the American woodsman, gazing upon them from the high decks of the gallant bark, had ample opportunities of observing their motions. They were all busily engaged on wing, hovering here and there around the Brown Pelicans, intent on watching their plunges into the water, and all clamorously teasing their best benefactors. As with broadly extended pouch and lower mandible, the Pelican went down headlong, so gracefully followed the gay rosy-breasted Gull, which, on the brown bird's emerging, alighted nimbly on its very head, and with a gentle stoop instantly snatched from the mouth of its purveyor the glittering fry that moment entrapped!

Is this not quite strange, reader? Aye, truly it is. The sight of these manœuvres rendered me almost frantic with delight. At times, several Gulls would attempt to alight on the head of the same Pelican, but finding this impossible, they would at once sustain themselves around it, and snatch every morsel that escaped from the pouch of the great bird. So very dexterous were some of the Gulls at this sport, that I have seen them actually catch a little fish as it leaped from the yet partially open bill of the Pelican. And now, reader, I will conclude this long article with some fragments from my journals.

Tortugas, May, 1832.—Whilst here, I often saw the Black-headed Gull of WILSON, sucking the eggs of *Sterna fuliginosa*, and *Sterna stolidus*. Our sailors assured me that these Gulls also eat the young of these two species of Terns when newly hatched.

Great Egg Harbour, May, 1829.—Like all other Gulls, the *Larus atricilla* disgorges its food when attacked by a Lestris, or when wounded, or suddenly surprised; but on all occasions of respite this Gull is apt to return to it, and vulture-like to swallow it anew. It differs however from the larger species of Gulls, by never, as far as I have observed, picking up bivalve shells, for the purpose of letting them fall to break them, and afterwards feed on their contents. On the ground they walk with considerable alertness, and not without a certain degree of elegance, especially during the love season. Whilst floating or swimming on the water, they are graceful in a high degree, and when seen, as they oftentimes are, in groups of many pairs, rising with, or sinking amidst the billows, which ever and anon break on the sandy shores of the coast, their alternate appearance

brings to the mind of the bystander ideas connected with objects altogether different from the simple yet beautiful Laughing Gull.

April 1, 1837.—South-west pass of the Mississippi. *L. Atricilla* abundant here at this season, as well as at New Orleans. Saw some floating on logs during a heavy breeze. Not noisy yet, though they and *L. zonorhynchus* are in full spring dress (the old birds).

Barataria Bay, April, 1837.—This species is abundant, following the porpoises, whilst the latter are fishing, and attending on them, as they do on the Brown Pelicans, which I saw here tormented by these birds, as in the Floridas. These Gulls follow the Brown Pelicans to their roosts, and along with them sit on grounded logs, at some distance from the shores, to avoid the attacks of racoons and other carnivorous animals.

Galveston Bay, April 26, 1837.—Black-headed Gulls are not unfrequently seen hovering over the inner ponds of these islands, as if in search of food. They are now all paired, and very noisy.

May 4.—I observed to-day that at the single cry of a Black-headed Gull, all others within hearing at once came towards the caller, and this never failed when any of them had found floating garbage on which to feed. These, as well as all other Gulls, pat the water with their feet, their legs being partially extended, whilst assisting themselves with the bill to pick up any floating food. At this time the whole group emit a more plaintive single note than usual. They come not unfrequently within a few yards of our vessel at anchor, and when the food thrown to them is exhausted, they separate, and at once renew their repeated cries. I observed that the few immature birds among the old ones, were quite silent even when in the company of the adults. When the young are nearly able to fly, they are by no means bad eating.

BLACK-HEADED GULL, *Larus ridibundus*, Wils. Amer. Orn., vol. ix. p. 89.

LARUS ATRICILLA, Bonap. Syn., p. 359.

BLACK-HEADED GULL, Nutt. Man., vol. ii. p. 291.

BLACK-HEADED OR LAUGHING GULL, *Larus atricilla*, Aud. Orn. Biog., vol. iv. p. 118.

Adult, 17, 40 $\frac{3}{4}$.

Most abundant from Texas to Massachusetts, breeding along the coast. Up the Mississippi to New Orleans. Those which in spring remove to the eastward of the Floridas return early in autumn.

Adult Male in spring.

Bill rather shorter than the head, nearly straight, moderately stout, compressed. Upper mandible with its dorsal outline straight to the middle, then curved and declinate, the ridge convex, the sides rapidly sloping, the

edges sharp and direct, the tip rather obtuse but sharp-edged. Nasal groove rather long and narrow; nostrils in its fore part, longitudinal, sub-medial, large, linear-oblong, broader anteriorly, pervious. Lower mandible with the angle long and pointed, the outline of its crura decurved anteriorly, that of the ridge slightly concave and ascending, the sides erect and nearly flat.

Head of moderate size. Neck of ordinary length. Body compact. Feet rather long, stoutish; tibia bare below for three-fourths of an inch, covered behind with narrow scutella; tarsus compressed, anteriorly covered with numerous curved scutella, laterally with small oblong scales, posteriorly with small scutella. Toes slender, of moderate length, covered above with numerous scutella; first extremely small, second much shorter than fourth, third two-twelfths of an inch longer than the latter; anterior toes connected by reticulated webs, the outer and inner slightly marginate; claws small, slightly arched, compressed, thin-edged, that of the middle toe with an expanded inner margin.

Plumage close, soft, and blended. Wings very long and pointed; primaries tapering to a rounded point; first longest, second a twelfth of an inch shorter, the rest rapidly diminishing; secondaries broad, incurvate, and obliquely rounded, the inner straight and more elongated. Tail of moderate length, even, of twelve broad, rounded feathers.

Bill and feet, as well as the margin of eyelids, and the inside of the mouth, of a rich deep carmine; claws brownish-black. Iris bluish-black. The head and a portion of the upper part of the neck all round, blackish lead-grey, darker on the upper part of the head and along the posterior margin, which descends lower in front, or to the extent of about two inches and a half from the base of the lower mandible; two narrow white bands bordering the upper and lower eyelids. Lower neck all round, the whole surface, the rump and tail, pure white; but the fore part of the neck and the breast, down to the legs, of a beautiful light rosy tint. The back and wings are greyish-blue, with a very slight tinge of purple, excepting a large terminal portion of the secondaries, and the tips of the primaries, which are white. The first primary is black, with a tinge of grey on the inner web at the base; the second and third similar, with the grey more extended; on the fourth it extends over two-thirds; the fifth is black only for an inch and a half; and on the sixth the black is reduced to two spots near the end; the other parts and the remaining primaries of the same general colour as the back.

Length to end of tail 17 inches, to end of wings 20, to end of claws 17; extent of wings $40\frac{3}{4}$; wing from flexure $12\frac{1}{2}$; tail $5\frac{1}{2}$; bill along the ridge $1\frac{1}{2}$, along the edge of lower mandible $2\frac{1}{4}$; tarsus 2; hind toe and claw $\frac{1}{2}$; middle toe and claw $1\frac{3}{4}$; outer toe and claw $1\frac{1}{2}$; inner toe and claw $1\frac{3}{4}$.

The female is precisely similar to the male, but considerably smaller.

In winter the head is white, the feathers on its upper part and on the nape more or less brownish-grey in their concealed part, that colour appearing in slight patches here and here, and especially along the posterior margin of the part that is coloured in summer, as well as on a small space before the eye. The rosy tint of the breast disappears after the breeding season. In other respects the plumage is as in summer.

Young fully fledged.

Bill, feet, inside of mouth, and edges of eyelids, olivaceous-brown. The upper parts are brownish-grey, the feathers edged with paler; the hind part of the back light bluish-grey; upper tail-coverts nearly white; tail pale greyish-blue, with a broad band of brownish-black at the end, the extreme tips narrowly edged with white, the outer margin of the lateral feathers of the same colour. The first four primaries are destitute of white at the tip. A smaller patch before the eye, two slight bands on the eyelids, and the throat, greyish-white; the lower part of the neck brownish-grey, the rest of the lower parts greyish-white, the sides darker, the axillars ash-grey, the lower surface of the wing dusky-grey.

In an adult male the tongue is $1\frac{1}{4}$ inches long, slender, tapering, emarginate at the base, with minute papillæ, the tip horny along the back. The œsophagus is $6\frac{1}{2}$ inches long, 5 twelfths in diameter until it enters the thorax, then dilates to 1 inch and 5 twelfths; its walls are extremely thin, its inner coat longitudinally plaited. Proventriculus very short, the belt of oblong glandules being only 7 twelfths in breadth. Stomach rather small, oblong, $1\frac{1}{2}$ inches long, 10 twelfths broad; its lateral muscles rather thick, the tendons large; the inner coat thick, horny, and thrown into very prominent longitudinal rugæ, its upper margin abrupt, and manifestly not continuous with the inner coat of the proventriculus, as some have supposed the epithelium to be in all birds. In the stomach remains of fishes. Intestines 1 foot $9\frac{1}{2}$ inches long, its general diameter $\frac{1}{4}$ inch. Rectum $1\frac{1}{2}$ inches; cœca extremely small, $2\frac{1}{2}$ twelfths long, $\frac{1}{2}$ twelfth in diameter.

Trachea $5\frac{1}{2}$ inches long; its rings 110, extremely thin and feeble; its diameter at the top $4\frac{1}{2}$ twelfths, at the lower part $2\frac{1}{2}$ twelfths. The lateral muscles are scarcely perceptible, the sterno-tracheal very slender; the inferior larynx small; the bronchi of moderate length and width, with 25 half-rings.

FRANKLIN'S ROSY GULL.

LARUS FRANKLINII, *Richardson.*

(NOT FIGURED.)

The following account of this species by Dr. RICHARDSON is taken from the *Fauna Boreali-Americana*.

"Franklin's Rosy Gull, with vermilion bill and feet; mantle pearl-grey; five exterior quills broadly barred with black, the first one tipped with white for an inch; tarsus twenty lines long; hood black in summer.

"This is a very common Gull in the interior of the Fur Countries, where it frequents the shores of the larger lakes. It is generally seen in flocks, and is very noisy. It breeds in marshy places. ORD's description of his Black-headed Gull (Wils: ix. p. 89) corresponds with our specimens, except that the conspicuous white end of the first quill is not noticed: the figure (Pl. 74, fig. 4) differs in the primaries, being entirely black. The Prince of MUSIGNANO gives the totally black primaries and a tarsus nearly two inches long, as part of the specific character of his *Larus atricilla*, to which he refers WILSON's bird; though, in his *Observations*, he states that the adult specimens have the primaries, with the exception of the first and second, tipped with white. *L. Franklinii* cannot be referred either to the *L. atricilla* or *L. melanocephalus* of M. TEMMINCK: the first has a lead coloured hood and deep black quill-feathers, untipped by white; and the black hood of the second does not descend lower on the throat than on the nape; its quill-feathers are also differently marked, and its tarsus is longer. His *L. ridibundus* and *L. capistratus* have brown heads, and the interior of the wings grey; the latter has also a much smaller bill than our *L. Franklinii*.

"Description of a male killed June 6, 1827, on the Saskatchewan.

"Colour.—Both eyelids, the neck, rump, tail, and whole under plumage, white, the latter and interior of the wings deeply tinged with peach-blossom red. Black hood covering three-quarters of an inch of the nape, and extending as much lower on the throat. Mantle and wings bluish-grey. The outer web of the first quill-feather is black to near the tip, and a broad band of the same crosses the ends of the five outer primaries; all the quill-feathers are terminated with white, that on the first primary and of all the



Kittiwake Gull.

Drawn from Nature by J. Audubon FRSELS.

1 Adult - 2 Young.

Printed & Col'd by J. T. Bowen Plaid.

secondaries being upwards of an inch long ; all the shafts whitish. Bill and legs vermilion, the former obscurely barred near the tip.

"Form.—Bill rather stout, curved from the nostrils, with the gonys forming an evident salient angle ; its depth equal to twice its breadth. Wings an inch and a half longer than the perfectly even tail. Thighs an inch bare.

"A female and another male, killed at the same place six weeks later in the season, correspond minutely with the above.

"Dimensions of a male. Length to end of tail 17 inches ; tail $4\frac{1}{2}$; wing 11 ; bill along the ridge $1\frac{5}{8}$; rictus $1\frac{1}{2}$; tarsus $1\frac{3}{8}$; middle toe $1\frac{3}{8}$, its nail $\frac{1}{2}$; inner toe 1 ; hind toe $\frac{3}{8}$, its nail $\frac{1}{8}$."

LARUS FRANKLINII, *Franklin's Rosy Gull*, Swains. and Rich. F. Bor. Amer., vol. ii. p. 424.

FRANKLIN'S ROSY GULL, *Larus Franklinii*, Aud. Orn. Biog., vol. v. p. 323.

Male, 17, wing, 11.

Interior of Fur Countries, breeding on the edges of large lakes.

THE KITTIWAKE GULL.

LARUS TRIDACTYLUS, *Linn.*

PLATE CCCCXLIV.—ADULT IN SUMMER, AND YOUNG IN WINTER.

This beautiful Gull ranges, during the autumnal and winter months, along the whole of our extensive coasts. I have procured it from the mouth of the Mississippi to the coast of Maine, and have traced it from the latter district to Labrador. Yet I never saw it on any of our great lakes or rivers, nor in any part of the interior. From New York to Eastport it is extremely abundant, and many breed on the Island of Grand Manan, off the entrance of the Bay of Fundy.

As we approached the famous Gannet Rock of the Gulf of St. Lawrence, the wind suddenly rose to a gale ; but as I was exceedingly anxious that a landing should be effected on the island, every exertion was made to enable me to accomplish my purpose. The whale boat was manned. THOMAS

LINCOLN and my son leaped into it, accompanied by young COOLEGE. Urged by strong pulls, the buoyant boat advanced towards the grim rock. For nearly an hour it became hidden from my sight; but now and then the report of a gun brought intimation that all was as yet safe; and at length I had the great pleasure of seeing it advancing towards the Ripley, which stood off and on, shivering as it were under the heavy blast. My eye fixed to the telescope, watched every movement of the boat, as with fear I saw it tossed from billow to billow, this moment a glimpse of her keel appearing over the edge of a wave, the next a foot of her stem only seeming to float on the waters. "Pull steadily on, my good lads," at last came on my ear, when, by a heavy surge, the floating shell was driven back some twenty yards, as I thought, and the wave, foaming with wrath, broke over her. Breathless and exhausted, the crew at length came within reach of a line, as the boat was dangerously plunging, when by good luck the rope was thrown across her, and in a few moments she lay snug under our lee. How happy was I when I again saw my son, my young companions, and the sailors, on the deck of the Ripley. Quickly was the whaler hauled on board, and with joy we saw our vessel fly off like a Kittiwake before the gale.

When the anxiety was over, inquiries were made as to the success of the adventurous party. Several nests of the Kittiwake and many of its eggs had been brought safe on board. Notes had been taken on the spot, and the result of the expedition was as follows:—The nests were found placed on some ledge of the huge rock, so small as barely to admit their breadth, which was about a foot. They were placed where no other bird than the Guillemot would have ventured to drop its egg, or the Raven to fix his nest. Yet on that narrow platform the Kittiwake sat on its three eggs, as unconcerned as if in a meadow. The nests were altogether composed of sea-weeds called "eel-grass," and coarse grasses, probably procured on the top of the rock, or stolen from the nest of some unwary Solan Goose. Their inner surface was quite flat, although some of the nests were many inches in thickness, and looked as if they had been increased in bulk year after year. The sitting birds remained on their eggs with uncommon pertinacity, seldom indeed flying off, but merely moving aside. The male birds, or those that had no eggs, on the contrary, were extremely clamorous, flew around the party in great concern, and shewed much courage. The eggs are of a light olive-green colour, marked with numerous irregular spots of dark brown. Their average length is two inches and a quarter, their greatest breadth one inch and seven-eighths. No other species of Gull was seen about the rock; and indeed I have regularly observed that each species of this genus breeds far apart, although at all other seasons it may associate with others.

The young remain a considerable time in the nest or about it, when room

is afforded. Their bills and feet are now quite black, the eye dark, and they do not change these colours until the second spring after their birth, when the bill is dull yellow, the legs and feet of a greenish flesh-colour, and these parts gradually improve in their tints until they acquire the appearance represented in the plate. This species raises only one brood in the season, and old and young leave the coast of Labrador at the first appearance of winter, or when the Ivory Gull reaches that country. This, however, I know only from hearsay, having received the information from a settler at Bras d'Or, who has lived there many years, and must know something of both species, as he was in the habit of salting young Kittiwakes for winter provisions, along with those of other species, and of shooting the Ivory Gull when it arrived over his harbour in the month of December.

The Kittiwake is on land the most awkward of its tribe; and, although it walks often on the rocks, its gait manifests a waddling gaucherie; but on the water, or in the air, few birds surpass it in buoyancy, grace, and ease of motion. Bearing up against the heaviest gale, it passes from one trough of the sea to another, as if anxious to rest for an instant under the lee of the billows; yet as these are seen to rear their curling crests, the Gull is already several feet above them, and preparing to plunge into the next hollow. While in our harbour, and during fine weather, they seemed to play with their companions of other species. Now with a spiral curve, they descend toward the water, support themselves by beats of their wings, decline their heads, and pick up a young herring or some bit of garbage, when away they fly, chased perhaps by several others anxious to rob them of the prize. Noon has arrived. High above the mast-head of our largest man-of-war, the Kittiwakes float gracefully in wide circles, until all, as if fatigued, sail downward again with common accord towards the transparent deep, and, alighting close to each other, seem to ride safely at anchor. There they now occupy themselves in cleaning and arranging their beautiful plumage.

The food of this species consists of small fish, sea insects, and small bivalves, most of which they procure while on wing, even those left dry by the tide. Unlike the larger species, they do not take up shell-fish to break them by letting them fall on the rocks; at least I never saw them do so. Their principal enemies are different species of *Lestris*, especially that beautiful one named the *L. parasiticus*. This tormentor follows the Kittiwake to the very waters around the Gulf of Florida during the winter. There, with astonishing swiftness, and an audacity scarcely to be surpassed, it gives chase to the Gull, overtakes it, and forces it to alight on the water, or to disgorge the fish which it has just swallowed.

The two represented in the plate were drawn at Boston, at the approach of spring, when the old birds had already assumed the pure white of the

head. This species was so abundant on several of the islands of the Bay of Boston, that several basketfuls of them were procured in the course of a few excursions. When one fell to the water, the rest would hover about and around the boat, until many were shot from a flock. The case was the same while we were in some of the harbours of Labrador.

LARUS TRIDACTYLUS, Bonap. Syn., p. 359.

LARUS TRIDACTYLUS, *Kittiwake*, Swains. and Rich. F. Bor. Amer., vol. ii. p. 423.

KITTIWAKE, Nutt. Man., vol. ii. p. 298.

KITTIWAKE GULL, *Larus tridactylus*, Aud. Orn. Biog., vol. iii. p. 186.

Adult, 18, 36½.

Common as far south as New York. Abundant from Massachusetts eastward. Breeds from the Bay of Fundy northward.

Adult in summer.

Bill shorter than the head, strong, nearly straight, compressed. Upper mandible with the dorsal line nearly straight and slightly declinate, until towards the end, when it is decurved, the ridge convex, the sides slightly convex, the edges a little inflected, straight, towards the end declinate and arched, the tip rather obtuse. Nasal groove narrow, rather long; nostril in its fore part, lateral, longitudinal, linear, wider anteriorly, open, and pervious. Lower mandible with a slight prominence at the end of the angle, which is long and narrow, the dorsal line then nearly straight and ascending, the sides convex, the edges sharp and inflected.

Head rather large, oblong, anteriorly compressed. Neck of moderate length. Body rather full. Wings long. Feet of moderate length, rather strong; tibia bare below; tarsus somewhat compressed, covered before and behind with numerous broad scutella, the sides reticulated; hind toe rudimentary, with a minute knob in place of the claw; the fore toes rather long and slender, the fourth longer than the second, all scutellate above, and connected by reticulated entire membranes, the lateral toes margined externally with a narrow membrane. Claws small, compressed, slightly arched, rather obtuse.

The plumage in general is close, elastic, very soft and blended, on the back somewhat compact. Wings very long, rather broad, acute, the first quill longest, the other primaries rapidly graduated; secondaries broad and rounded, the inner elongated and narrow. Tail of moderate length, even, of twelve rounded feathers.

Bill pale greenish-yellow. Edges of eyelids crimson; iris reddish-brown. Feet black. The head, neck, rump, tail, and lower parts generally are pure white. The back and upper surface of the wings light pearl-grey. The



Ivory Gull.

Adult Male. 2 Young second summer.

Drawn from Nature by J. Audubon, F.R.S.

Lith. Print. of R. Colby, J. T. Bowen, Philad.

first five quills are black at the end, the first on its outer web also, the fifth with a small white tip, the tips of all the other quills more or less white.

Length to end of tail 18 inches, to end of wings 20, to end of claws 17; extent of wings $36\frac{1}{2}$; wing from flexure 12; tail 7; bill along the back $1\frac{1}{2}$, along the edge of lower mandible $2\frac{2}{3}$; tarsus $1\frac{7}{8}$; middle toe $1\frac{1}{2}$, its claw $\frac{4}{8}$. Weight $1\frac{1}{2}$ lbs.

Young bird in January.

Bill and feet black. Edges of eyelids and iris as in the adult. The hind head and neck are bluish-grey, and before the eye there is a semi-lunar blackish mark, the tips of the auriculars also dark grey. Forehead, sides of the head, throat, and lower parts, white, as is the rump. Tail white, with a broad terminal band of black, the outer feather having only a spot on the inner web. The mantle is bluish-grey, but a broad band of black crosses the lower part of the hind neck, and the larger wing-coverts are of the same colour towards the end. The primary quills are black, more or less margined with white internally.

Length to end of tail 17 inches, to end of wings 19, to end of claws 17; extent of wings $36\frac{3}{8}$. Weight $14\frac{1}{2}$ oz.

THE IVORY GULL.

LARUS EBURNEUS, *Gmel.*

PLATE CCCCXLV.—ADULT AND YOUNG.

Having ascertained that this beautiful species visits the southern coast of Labrador and Newfoundland every winter, I have thought it probable that it occasionally extends its rambles as far as our eastern shores, and therefore determined to include it in my Illustrations. The figures in the plate were taken from two specimens procured by Captain JAMES CLARK ROSS, one of which was an adult male, the other a young bird in its second year. Captain SABINE says that the Ivory Gulls are attracted in considerable numbers by whale blubber, are therefore usually found in company with the *Procellaria glacialis*, and are easily killed, being by no means shy. Dr. RICHARDSON informs us that they were observed breeding in great numbers on the high perforated cliffs which form the extremity of Cape Parry, in latitude 70° .

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LARUS EBURNEUS, Bonap. Syn., p. 360.

LARUS EBURNEUS, *Ivory Gull*, Swains. and Rich. F. Bor. Amer.

IVORY GULL, Nutt. Man., vol. ii. p. 301.

IVORY GULL, *Larus eburneus*, Aud. Orn. Biog., vol. iii. p. 571

Adult, 19, 41.

Accidental on the coast of the United States. Common in winter in Labrador and Newfoundland. Breeds in high latitudes.

Adult Male.

Bill shorter than the head, robust, nearly straight, compressed. Upper mandible with the dorsal line nearly straight at the base, arched and declinate towards the end, the ridge convex, the sides slightly so, the edges sharp, a little inflected, somewhat arched, the tip rather obtuse. Nasal groove rather long and narrow; nostrils in its fore part, lateral, longitudinal, linear, wider anteriorly, pervious. Lower mandible with a prominence at the end of the angle, which is long and narrow, the dorsal line slightly concave and ascending, the sides flattened, the edges sharp and inflected.

Head rather large. Neck of moderate length, strong. Body rather full. Feet of moderate length, stout; tibia bare below; tarsus somewhat compressed, covered before with numerous scutella, on the sides and behind with series of small angular scales; the hind toe very small and elevated, the fore toes of moderate length, the fourth much longer than the second, the third longest, the hind one with a single scutellum and three transverse series of scales, the rest scutellate above and connected by reticulate membranes having a concave margin, the lateral toes margined externally with a narrow membrane. Claws stout, rather large, arched, compressed, rather obtuse, that of middle toe with an enlarged inner edge.

The plumage in general is close, full, elastic, soft and blended, on the back rather compact. Wings very long, rather broad, acute, the first quill longest, the other primaries rapidly graduated; secondaries broad and rounded, the inner tapering but rounded. Tail of moderate length, even, of twelve rather broad rounded feathers.

Bill bright yellow, greenish-dusky at the base. Iris brown, edges of eyelids vermilion. Feet and claws black. The whole of the plumage is pure white.

Length to end of tail 19 inches, to end of wings $20\frac{1}{2}$; extent of wings 41; wing from flexure $13\frac{1}{2}$; tail $6\frac{1}{4}$; bill along the back $1\frac{5}{8}$, along the edge of lower mandible 2; tarsus $1\frac{7}{8}$; middle toe $1\frac{2}{8}$, its claw $\frac{1}{4}$. Weight 20 oz.

Young of the second year, killed in September.

After the second moult, the bill is pale yellow at the end, dusky at the base for two-thirds of its length; the edges of the eyelids vermilion, the iris brown, the feet black. The plumage is white; the forehead and sides of the



Common American Gull. Ring-billed Gull.

1 Adult 2 Young

Drawn from Nature by J. J. Audubon F.R.S.E.L.S.

Engr. by J. T. Bowen, Plated.

head mottled with leaden-grey; most of the wing-coverts have towards the end a spot of greyish-black, and the quills, large coverts, and tail-feathers are similarly marked, the markings on the tail forming a subterminal bar.

THE COMMON AMERICAN GULL.

LARUS ZONORHYNCHUS, *Richardson.*

PLATE CCCCXLVI.—ADULT MALE, AND YOUNG IN WINTER.

No country can afford greater facilities for the migration of water-birds than the United States of America. Even the Gulls are enabled to traverse their whole extent from north to south, and in the contrary direction, without suffering from want of food or of proper resting places. The Gull that has been bred in Labrador, or still farther north, can reach the Gulf of Mexico without being seriously incommoded by the storms that now and then rage along the Atlantic coast. The broad waters of the St. Lawrence lead it to our great lakes, from which hundreds of streams conduct it to the head waters of the Ohio or the Mississippi, by following the windings of which it at length arrives in the warm regions of the Mexican Gulf, on whose waters the traveller can spend the winter. That these advantages are embraced by many species of Gull, there can be no doubt; and should you, as I have done, repeatedly visit our broad lakes, or the great rivers just mentioned, you would find there, at particular seasons, not only this species, but several others, as well as various kinds of Terns, but none of the genus *Lestris*. Lake Erie supplies with food the *Larus marinus*, *L. Argentatus*, *L. atricilla*, and some others, as well as the Great, the Arctic, the Roseate, and the Black Terns, all of which pass at times over to the Ohio, and from thence to the ocean. During these inland movements, the birds seem to be peculiarly attracted by certain places, at which they remain for awhile. Thus, at the Falls of the Ohio, some species remain for weeks, and wherever much shipping occurs on that river or the Mississippi, Gulls are sure to be seen gleaning the garbage that has been thrown overboard, or seizing such fishes as rise incautiously to the surface of the water. In the months of September and October, Gulls and Terns might almost be said to abound on

our great streams, and many return thither during the spring months on their way northward. Nay, to some species of Tern, the beautiful sand-bars and rocky beaches that occur here and there, are so attractive as to induce a few to remain and breed there. This is especially the case with the Black Terns, some of which rear their young by the rapids of the Ohio below Louisville, amidst the roaring sounds of which may be heard their shrill and continued cries.

You must not suppose, however, that all the Gulls which migrate in that country take the same route; for thousands follow the sinuosities of our Atlantic coast, some of them perhaps proceeding as far south in that direction as those which follow our rivers. My opinion is, that the feeblér individuals of the different species follow the inland route, while the older and more hardy birds keep along the shores of the ocean. The examination of numerous specimens on both of these extensive tracks has almost rendered this a matter of certainty, yet I should be much pleased to find this opinion corroborated by the observations of any other student of nature.

While on the coast of Florida, in the winter of 1832-33, I every day saw Gulls of many species, but among them all were no adult birds, with the exception of the Black-headed Gull of WILSON, which was very abundant. This greatly tended to strengthen my opinion, that the young Gulls are of more delicate constitutions than their parents, which are better enabled to stand the rigours of the winter in the Middle States, where they are found equally abundant at that season. For similar reasons, I also feel assured that the oldest birds are those which go farthest north to breed, and that the older and stronger individuals are larger, with more purely tinted plumage, and with the colours of their legs, feet and bills, as well as of the circle around the eye, more vivid than those which, although found breeding, yet have not acquired their full maturity. In consequence of these circumstances, some species have been described as forming several, and the great difference between the plumage of the young and the old birds has led to similar errors.

Our Common Gull is seldom seen in the adult plumage of winter beyond the shores of Maryland southward, or in full summer plumage beyond the Bay of New York, and this rarely after the middle of April, as at that period they gather into flocks, and remove farther north to breed. The places to which this species resorts for that purpose, and which I have visited, are several islands between Boston and Eastport, another close to Grand Manan at the entrance of the Bay of Fundy, the Great Gannet Rock of the Gulf of St. Lawrence, and certain rocky isles in the deep bays on the coast of Labrador.

This species, although one of those most abundant on our coast, is so well acquainted with the artifices of man, that it keeps more than others beyond

the reach of the gun. While in our harbours or rivers it sails at a moderate height, sometimes mingling with the silvery Gull, or even with the Great Black-backed. Its movements are graceful and easy, and it floats as it were in the air, whether proceeding in a direct line, or in irregular curves, when, suddenly checking its speed, it partially closes its wings, and descends with rapidity in a spiral manner. As it approaches the water, it allows its legs to hang, opens its bill, and while seizing its food, raises its wings erect and flaps them quickly to support its body. Now with loaded bill it sweeps off to some distance, alights, and devours its prey.

When in pursuit of a shoal of small fish, it assembles in flocks, keeps up a constant yelping noise, dips every instant among the fry, and continues to feed until so gorged as to be unable to fly. Alighting in groups, they float with great buoyancy, and it is pleasant to see them rising and falling alternately on the waves of a moderately agitated sea, the snowy whiteness of their under parts contrasting with the deep green water, and their elongated wings extending beyond the tail, giving the appearance of lightness and agility to their form.

The flight of this species is light and long sustained, and the circumstance of birds of this genus being able to find food almost anywhere, induces them at times to proceed far out to sea; and I have now and then been gratified by the sudden appearance of several birds of the present species to the lee of the ship, on whose deck I was with impatience watching for the sight of land. The winged pilgrims would no sooner come up than they also would express their pleasure by their cries, especially when they received from the passengers bits of bread or such garbage as might be at hand. Once fed, they would fly about us the whole day, and sometimes would be seen the next; and then perhaps all at once, as if made aware of the existence of land in a particular direction, they would fly off, and we would see no more of them.

When spring has fairly commenced, our Common Gulls assemble in parties of hundreds, and alight on mud flats or sandy beaches, in our eastern estuaries and bays. For awhile they regularly resort to these places, which to the Gulls are what the scratching or tooting grounds are to the Pinnated Grouse. The male Gulls, however, although somewhat pugnacious, are not very inveterate in their quarrels, making up by clamour for the deficiency of prowess in their tournaments. The males bow to the females with swollen throats, and walk round them with many odd gesticulations. As soon as the birds are paired, they give up their animosities, and for the rest of the season live together on the best terms. After a few weeks spent in these preparatory pleasures, the flocks take to wing, and betake themselves to their breeding places.

On an island within a few miles of Eastport in Maine, I found these birds breeding in great numbers in the beginning of May. Their nests were there placed amid the scanty tufts of grass. On the Gannet Roek, early in June, they were breeding on the shelves towards the summit, along with the Guillemots, while the Kittiwakes had secured their nests far below. The different species kept apart, but yet exhibited no antipathy towards each other. On the 18th of July, we discovered a low rocky island at the bottom of a bay ten miles from the open sea, opposite the harbour of Little Macitana, on the coast of Labrador, where we found upwards of two hundred nests, all containing eggs with the chicks more or less advanced. The number of eggs in each nest was three or four, more generally three. They resembled those of the Great Black-backed Gull in form and colour, but were much smaller, measuring two inches and three-quarters in length, by one and five and a half eighths in their greatest diameter. There was considerable diversity both in the tint of their ground colour, and in the number and size of the spots on them, as is the case with the eggs of most water-birds. In general, however, they were of a dull dark cream-colour, thickly blotched, sprinkled and touched with different shades of purple, umber, and black. When fresh, these eggs are delicious food, as I have had abundant occasion to know. The nests were in this place all situated on the bare rock, but in all other respects resembled those found among the grass or on more elevated rocks; they were formed of sea-weeds, well constructed, about six inches across within, and twelve in their greatest diameter. Some of the nests were much thicker and larger than others; many were placed within the distance of a foot from each other; and the whole place was covered with feathers and dung, which emitted a very disagreeable stench, proving to us that it was annually resorted to by these birds. To our surprise the birds were very shy. Among those killed by us were some having all the appearance of mature age, such as I have mentioned above. The number of individuals among them having the black ring on the bill was much greater than among those found near Grand Manan; some, however, were without this ring, and on others it was but partially marked. Some had no white on the tips of the primaries, and differences were also observable in the length of the tarsus and toes; but all had the same voice, and were actually of the same species. We also found considerable differences in their size and weight, even in individuals of the same sex, some weighing one pound, others four ounces more, and some so much as one pound ten ounces. The males, at an average, were larger than the females. Not a bird of any other species was found there, or on the grassy islands.

Whatever opinion may be held as to the synonyms of this Gull, I am perfectly assured of the above mentioned variations in the colour, size, and

markings of the younger and older birds. I am equally sure that no individuals acquire the full beauty of the plumage before the third spring. The young are at first of a dull greenish-yellow, spotted with dark brown on the head and rump. In a very few days they leave the nest, ramble about in its vicinity, waiting the arrival of their parents with food, and conceal themselves under stones or in crevices at the appearance of danger. When a few weeks old, they do not hesitate, on being pursued, to betake themselves to the water, where they swim with great lightness. When about the size of pigeons, they assume a brownish colour, each feather being broadly banded or tipped with light ferruginous and grey. At this season, the fishermen of Labrador and Newfoundland kill them in great numbers, and pack them in salt for winter use. I was much surprised one morning while at Labrador, to see one of the barges of the *Gulnarc* come alongside of the *Ripley* after a long cruise, when officers and men were glad to have a good mess of these young Gulls in the bow of their boat, they having run short of provisions.

LARUS CANUS, *Mew or Common Gull*, Swains. and Rich. F. Bor. Amer., vol. ii. p. 420.

LARUS ZONORHYNCHUS, *Ring-billed Mew-Gull*, Ibid., p. 421.

LARUS BRACHYRHYNCHUS, *Short-billed Mew-Gull*, Ibid., p. 422.

RING-BILLED MEW-GULL, Nutt. Man., vol. ii. p. 300.

COMMON AMERICAN GULL, *Larus zonorhynchus*, Aud. Orn. Biog., vol. iii. p. 98; vol. v. p. 638.

Adult, 20, 48.

Common during winter from Texas, along the coast, to Maine. Up the Mississippi to Natchez. Breeds from Maine to Labrador, Hudson's Bay, and Arctic shores. Columbia river. Migratory.

Adult Male in summer plumage.

Bill shorter than the head, robust, nearly straight, compressed. Upper mandible with the dorsal line nearly straight at the base, arched and declinate towards the end, the ridge convex, the sides slightly convex, the edges sharp, inflected, arched, the tip rather obtuse. Nasal groove rather long and narrow; nostrils in its forepart, lateral, longitudinal, linear, wider anteriorly, open, and pervious. Lower mandible with a prominence at the end of the angle, which is long and narrow, the dorsal line then nearly straight and ascending, the sides convex, the edges sharp and inflected.

Head rather large. Neck of moderate length. Body rather full. Wings long. Feet of moderate length, rather slender; tibia bare below; tarsus somewhat compressed, covered before and behind with numerous broad scutella, the sides reticulated; hind toe very small and elevated, the fore toes rather long and slender, the fourth longer than the second, the third longest,

all scutellate above, and connected by reticulated entire membranes, the lateral toes margined externally with a narrow membrane. Claws small, compressed, slightly arched, rather obtuse.

The plumage in general is close, elastic, very soft and blended, on the back rather compact. Wings very long, rather broad, acute, the first quill longest, the other primaries rapidly graduated; secondaries broad and rounded, the inner elongated and narrow. Tail of moderate length, even, of twelve rounded feathers.

Bill marked opposite the angle with a broad transverse band of brownish-black, between which and the base it is light greenish-yellow, the tips orange-yellow. Edges of eyelids greenish-yellow; iris bright yellow. Feet greenish-yellow, the webs tinged with orange; claws black. The general colour of the plumage is pure white, excepting the back and wings, which are light pearl-grey. The first six quills are black towards their extremities, the first and second being almost entirely so, the sixth with only a small spot. The tips of these feathers are white, that of the first having merely a narrow margin of that colour, which gradually enlarges on the rest, the first moreover has near the end a long patch of white, the second a smaller one on the inner web. The proportional size of the white marks on the outer primaries varies in individuals. The other quills and secondaries are all white at the ends.

Length to end of tail 20 inches, to end of wings $22\frac{1}{2}$, to end of claws $20\frac{1}{2}$; extent of wings 48; wing from flexure $15\frac{1}{2}$; tail 6; bill along the back $1\frac{3}{4}$, along the edge $2\frac{3}{8}$, depth at the base $\frac{1}{2}$, depth at the prominence $\frac{1}{2}$; bare part of the tibia $\frac{3}{4}$; tarsus 2; middle toe $1\frac{3}{8}$, its claw $\frac{1}{2}$; hind toe $\frac{3}{4}$, its claw $\frac{1}{8}$. Weight $1\frac{1}{2}$ lbs.

Young bird, after first moult, shot on 26th November.

Bill black, base of lower mandible and edges of upper towards the base, livid flesh-colour. Edges of eyelids livid blue; iris hazel. Feet purplish-grey; claws brownish-black. The general colour of the plumage is dull white, mottled with greyish-brown beneath, on the back with large brownish-black spots, the dark markings being central. Anterior to the eye is a crescent of greyish-black. The outer primary quills are black, the two first without white at the ends, the rest margined round the ends with that colour. The abdominal and tibial feathers are white; the lower and upper tail-coverts white, with brown spots.

Length to end of tail $18\frac{3}{8}$, to end of wings $20\frac{1}{4}$, extent of wings $44\frac{1}{2}$; tarsus 2; middle toe $1\frac{3}{8}$, its claw $\frac{1}{8}$. Weight 1 lb. 3 oz.

On a rocky island on the coast of Labrador, where this bird was breeding in great numbers, a comparatively small number of individuals only had the bill marked with the black ring, the others, although precisely similar in

other respects, wanted that mark. This bird, although in many respects precisely similar to that which is usually named *Larus canus* in Europe, differs greatly in the size of the bill, which even in young birds is much deeper than in the oldest individuals of that species.

Female, from Dr. T. M. BREWER. Mouth 1 inch 1 twelfth in width ; palate with two very prominent papillate ridges, the space between which is covered with reversed papillæ, its anterior part with five prominent lines, and moderately concave ; the posterior aperture of the nares oblong-linear, 11 twelfths in length. Tongue 1 inch 5 twelfths long, emarginate and finely papillate at the base ; its sides nearly parallel as far as the middle, its breadth being 3 twelfths, then tapering to a narrow emarginate point, and trigonal. Œsophagus 7 inches long, extremely wide, its breadth being $1\frac{1}{2}$ inches ; that of the proventriculus 1 inch 9 twelfths. The stomach is rather small, elliptical, 1 inch 5 twelfths long, 1 inch 2 twelfths broad ; its lateral muscles distinct and of moderate size, the lower prominent, the tendons large, the epithelium dense, with very prominent large rugæ ; the inner coat of the Œsophagus is longitudinally plicate ; the proventricular belt 1 inch in breadth, with six broad plates. Intestine 30 inches long, its width at the upper part 5 twelfths, diminishing to $2\frac{1}{2}$ twelfths, cæca 3 twelfths long, 1 twelfth broad, 3 inches distant from the extremity, rectum 5 twelfths broad, with a globular cloaca 9 twelfths in diameter. The duodenum curves at the distance of $2\frac{1}{4}$ inches, advances toward the liver in the usual manner, and is afterwards very regularly coiled in an elliptical form, with 10 bends. Trachea 5 inches long, from 3 twelfths to $2\frac{1}{2}$ twelfths in breadth, not flattened, its rings slightly osseous, 130. Bronchi wide, of 20 half rings. The lateral and sterno-tracheal muscles are slender, and a slip on each side extends to the last half-ring of the trachea.

THE WHITE-WINGED SILVERY GULL.

LARUS LEUCOPTERUS, *Faber.*

PLATE CCCXLVII.—ADULT MALE, AND YOUNG.

I have not met with this species farther south than the Bay of New York. During the winter it is not rare about Boston and farther eastward. At the approach of summer, before the pairing of the Herring Gull, *Larus argentatus*, the White-winged Gulls collect in flocks, and set out for the distant north, where they breed.

The flight of this species so much resembles that of the Herring Gull, that were it not for its smaller size, and the different colour of its wings, it could not be distinguished from the other. It is less shy, however, proceeds farther up the rivers and salt-water creeks, and alights oftener on the water as well as on the salt-meadows, than that species. While at Portland in Maine, I observed a good number of these Gulls flying over the inner harbour close to the shores, descending towards the water, and picking up garbage in the manner of the Herring Gulls, with which they associated. Their notes were not so loud, nor so often heard.

I was surprised to find but very few on the coast of Labrador, and these did not seem to be breeding, for although we carefully watched them, we did not succeed in finding any nests.

LARUS LEUCOPTERUS, Bonap. Syn., p. 361.

LARUS LEUCOPTERUS, *White-winged Silvery Gull*, Swains. and Rich. F. Bor. Amer., vol. ii. p. 418.

WHITE-WINGED SILVERY GULL, Nutt. Man., vol. ii. p. 305.

WHITE-WINGED SILVERY GULL, *Larus leucopterus*, Aud. Orn. Biog., vol. iii. p. 553.

Adult, 26, 50.

During winter from New York to Nova Scotia. Not rare. Breeds on the islands and peninsulas of the Arctic Seas.

Adult Male.

Bill shorter than the head, strong, nearly straight, compressed. Upper mandible with the dorsal line nearly straight at the base, arched and declinate towards the end, the ridge convex, the sides slightly convex, the edges sharp, nearly direct, the tip rather obtuse. Nasal groove rather long and



White-winged Laysan Gull.

1. Male in Summer. 2. Young in Winter.

Drawn from Nature by J. Audubon FRSEL.

Lith. Printed & Col'd by J. T. Bowen Philad.

narrow; nostrils in its fore part, lateral, longitudinal, linear, wider anteriorly, open and pervious. Lower mandible with a prominence at the end of the angle, which is long and narrow, the dorsal line then nearly straight and ascending, the sides flat and slightly inclined, the edges sharp and inflected.

Head rather large. Neck of moderate length. Body rather full. Wings very long. Feet of moderate length, rather slender; tibia bare below; tarsus somewhat compressed, covered before with numerous broad scutella, laterally and behind with roundish scales, on the outer side also with a row of small scutella; toes of moderate length, rather slender, all covered above with scutella; the anterior connected by reticulated webs, the two lateral with an external thick margin; the first extremely small, the third longest, the fourth longer than second; claw of hind toe smallest, of third largest, with an inner thin edge, of second next in size, all more or less compressed and obtuse.

The plumage in general is close, elastic, very soft and blended, on the back rather compact. Wings very long, broad, pointed; primaries tapering, the first longest, the second slightly shorter, the rest rapidly graduated; secondaries broad and rounded, the inner elongated and rather narrow. Tail of moderate length, even, of twelve broad feathers.

Bill gamboge-yellow, with a spot of orange-red near the end of lower mandible; the angle of the mouth and the edges of the eyelids are also orange-red. Iris pale yellow. Feet pale flesh-colour; claws greyish-brown. The whole plumage is pure white, excepting the back and upper surface of wings; the tips of the secondaries, the terminal third or so of the primaries, their shafts, and the upper tail-coverts also white.

Length to end of tail 26 inches, to end of wings $28\frac{1}{4}$; extent of wings 50; bill along the back $1\frac{1}{2}$, along the edges $2\frac{1}{2}$; tarsus $2\frac{1}{2}$; middle toe $2\frac{1}{2}$, its claw $\frac{1}{2}$; wing from flexure $17\frac{1}{2}$; tail $6\frac{1}{2}$.

Young in winter.

Bill yellow, the tips black. Edges of eyelids pale reddish-orange; iris brown. Feet yellowish flesh-colour; claws greyish-brown. The plumage is yellowish-grey, marked on the head and neck with longitudinal streaks of pale brown, on the back and wings with transverse undulations, those on the tail much fainter; the first six quills destitute of markings.

WESTERN GULL.

LARUS OCCIDENTALIS, Aud.

(NOT FIGURED.)

Two specimens of this Gull have been sent to me by Mr. TOWNSEND. One of them, an adult, is marked, "Male, Cape Disappointment, October 7th, 1836;" the other, a young bird, "Young Male, Cape Disappointment, October 6th, 1836." The iris of both is stated to have been light hazel. This species, which I presume to be undescribed, as I have not met with any account of it, is about equal to *Larus marinus* in size, and resembles *L. argentatus* in colour, but differs from both in many respects, as will be seen from the annexed description. It is especially remarkable for the great depth and comparative shortness of its bill, which in this respect approaches to *L. melanoleucus* of New South Wales. The adult specimen unfortunately has the wings imperfect, the primary quills having been only partially developed; but the wings of the younger bird are complete.

WESTERN GULL, *Larus occidentalis*, Aud. Orn. Biog., vol. v. p. 320.

Male, 27, wing $17\frac{1}{4}$, but the feathers not complete.

Adult Male.

Bill shorter than the head, robust, compressed. Upper mandible with the dorsal line straight as far as the end of the nostrils, decurved toward the end, the ridge convex, gradually narrowed to the point, the sides nearly flat, the edges sharp, inflected, toward the end direct and arcuato-declinate, the tip rather sharp; lower mandible with the angle long and narrow, the outline of the crura slightly arched, the dorsal line beyond the prominence at the angle ascending and slightly concave, the sides erect and nearly flat, the edges sharp, inflected, decurved toward the narrow tip. Nostrils medial, lateral, linear-oblong, wider anteriorly, in the fore part of the nasal groove, which is rather long and narrow.

Head large, broadly ovate, narrowed anteriorly. Neck of moderate length, thick. Feet of moderate length, rather slender; tibia bare for an inch and a quarter, reticulate; tarsus rather short, somewhat compressed, covered anteriorly with numerous scutella, laterally with angular scales, behind with

numerous small somewhat rectangular scales. Hind toe very small and elevated; the fore toes rather long, the fourth little shorter than the third; all scutellate above, and connected by reticulate webs; the lateral toes margined externally with a thick membrane. Claws small, slightly arched, somewhat compressed, blunt, that of the middle toe with the inner margin expanded.

The plumage is full, close, elastic, very soft and blended, on the back and wings rather compact. Wings very long, broad (four outer primaries only partially developed); secondaries broad and narrowly rounded. Tail even (not fully developed).

Bill yellow, with an orange-red patch toward the end of the lower mandible. "Iris light hazel." Feet flesh-coloured, claws dusky. The head, neck, lower parts, rump, and tail, are pure white; the back and wings light greyish-blue, of a deeper tint than in *L. argentatus*; the edges of the wing and the extremities of all the quills are white; the first seven quills are greyish-black toward the end, that colour including the outer webs and the greater part of the inner of the two first, and on the rest gradually diminishing, so as on the seventh merely to form a subterminal bar; the first quill with a patch of white on both webs near the end; the tips of all being white.

Length to end of tail 25 inches (but the tail is not full grown); bill along the ridge $2\frac{7}{8}$, along the edge of lower mandible $3\frac{1}{4}$, its depth at the base $1\frac{1}{2}$, at the angle $1\frac{1}{2}$; tarsus $2\frac{1}{2}$; hind toe $\frac{3}{4}$, its claw $\frac{2}{3}$; second toe $1\frac{9}{16}$, its claw $\frac{5}{8}$; third toe $2\frac{6}{16}$, its claw $\frac{5}{16}$; fourth toe $2\frac{1}{16}$, its claw $\frac{1}{16}$.

Young Male.

Bill flesh-coloured, beyond the nostrils and angle black, with the tips horn-coloured. Feet flesh-coloured; claws brownish-black. The upper part and sides of the head, the hind part and sides of the neck light brownish-grey, mottled and streaked with white; on the back the colour is light greyish-blue, some of the feathers mottled with brown, the adult plumage having been partially assumed; the wing-coverts are chiefly of a greyish-brown colour; the primary quills greyish-black, without white at the end; the secondary blackish-grey, margined and tipped with white, finely undulated with brown. The rump is white; the tail greyish-black, tipped with white; the whole outer web of the outer, and the basal half of that of the next feather white; the lower wing-coverts dusky-grey. All the lower parts are greyish-white, obscurely mottled with pale brownish-grey.

Length to end of tail 27 inches; bill along the ridge $2\frac{1}{2}$, along the edge of lower mandible $3\frac{1}{2}$, its height at the base $1\frac{1}{2}$, at the angle $1\frac{1}{2}$; wing from flexure $17\frac{1}{4}$; tail $7\frac{1}{4}$; tarsus $2\frac{1}{2}$; middle toe $2\frac{1}{4}$, its claw $1\frac{1}{2}$.

From the above description, it will be seen that in proportions and colouring this species does not differ much from *L. argentatus*. It is much larger, however; its bill is deeper and stronger in a very conspicuous degree, and its tarsi and toes are considerably longer.

THE HERRING OR SILVERY GULL.

LARUS ARGENTATUS, *Brunn.*

PLATE CCCCXLVIII.—MALE.

On the 22d of May, 1833, I was kindly received with my party on board the United States revenue cutter *Swiftsure*, commanded by Captain COOLIDGE, and on the morning of the next day was landed on White Head Island, at the entrance of the Bay of Fundy. This island is the property of a worthy Englishman of the name of FRANKLAND, who received us with great hospitality, gave us leave to ransack his dominions, and invited us to remain as long as we pleased. The Herring Gulls, he said, were breeding in great numbers, and we might expect good sport. We immediately set out in search of them, directing our course toward the pine woods, in which we were informed we should find them, and in approaching which we passed over an elevated marsh of great extent. As we came up to the place I observed that many of the Gulls had alighted on the fir-trees, while a vast number were sailing around, and when we advanced nearer, the former took to wing, abandoning their nests, and all flew about uttering incessant cries.

I was greatly surprised to see the nests placed on the branches, some near the top, others about the middle or on the lower parts of the trees, while at the same time there were many on the ground. It is true I had been informed of this by our captain, but I had almost believed that, on arriving at the spot, I should find the birds not to be Gulls. My doubts, however, were now dispelled, and I was delighted to see how strangely Nature had provided them with the means of securing their eggs and young from their arch-enemy man. My delight was greatly increased on being afterwards informed by Mr. FRANKLAND that the strange habit in question had been acquired by these Gulls within his recollection, for, said he, "when I first came here, many years ago, they all built their nests on the moss and in open ground; but as my sons and the fishermen collected most of their eggs for winter use, and sadly annoyed the poor things, the old ones gradually began to put their nests on the trees in the thickest parts of the woods. The youngest birds, however, still have some on the ground, and the whole are becoming less wild since I have forbidden strangers to rob their nests; for, gentlemen, you are the only persons out of my family that have fired a



Herring or Silvery Gull.
Adult in Spring & Young in Autumn.

gun on White Head Island for several years past, and I daresay you will not commit any greater havoc among them than is necessary, and to that you are welcome."

I was much pleased with the humanity of our host, and requested him to let me know when all the Gulls, or the greater part of them, would abandon the trees and resume their former mode of breeding on the ground, which he promised to do. But I afterwards found that this was not likely to happen, because on some other islands not far distant, to which the fishermen and eggers have free access, these Gulls breed altogether on the trees, even when their eggs and young are regularly removed every year, so that their original habits have been entirely given up. My opinion that, after being thus molested for some time longer, they may resort to the inaccessible shelves of the high rocks of these islands, was strengthened by Mr. FRANKLAND's informing me that many pairs had already taken refuge in such places, where they bred in perfect security. The most remarkable effect produced by these changes of locality is, that the young which are hatched on the trees or high rocks, do not leave their nests until they are able to fly, while those on the ground run about in less than a week, and hide themselves at the sight of man among the moss and plants, which frequently saves them from being carried away. The young on the trees are shaken out of their nests, or knocked down with poles, their flesh being considered as very good by the fishermen and eggers, who collect and salt them for winter provision. Some of the nests which I saw were placed at a height of more than forty feet on the trees, others, seen in the thickest parts of the woods, were eight or ten feet from the ground, and were placed close to the main stem, so as to be with difficulty observed. It was truly curious to see the broad-winged birds make their way to and from them in these secluded retreats. The nests placed on the ground were several yards apart, and measured from fifteen to eighteen inches in diameter, their cavity being from four to six. The lower stratum consisted of grass, plants of various kinds, moss and grey lichens, and the whole was lined with fine bent, but without any feathers. Those on the trees measured from twenty-four to twenty-six inches in diameter externally, and were composed of the same materials, but in greater quantity, the object of which I thought might be to allow more space to the young while growing, as they could not enjoy the pleasure of running about like those hatched on the ground. Perhaps, however, the smaller size of the nests placed there may be owing to their belonging to the younger Gulls, as I have often observed that the older the individual the larger is its nest. Mr. FRANKLAND informed me that they frequently repair the old nests at the commencement of the breeding season, and I found the assertion proved by my own observation. The eggs, which are three, measure three inches

in length, by two in breadth, have an oval somewhat pyriform shape, are rough though not granulated, and are of a dull yellowish earthy colour, irregularly blotched and spotted with dark-umber. They are nearly as large as those of the Great Black-backed Gull; but they differ considerably in size as well as in colour, some being more or less rounded or elongated. The yolk is bright orange, the albumen bluish-white; and they are excellent eating.

About the beginning of May the Herring Gulls collect into great flocks for the purpose of reproducing, and betake themselves to large sand-bars or mud-flats at low water, where their cacklings may be heard at a great distance. With the aid of a glass you may see them going through their courtships; the males swell their throats, walk about proudly, throw their heads upwards, and emit their love-notes. These general meetings take place at all hours of the day, according to the state of the tide, and continue for about a fortnight, when they all depart and betake themselves to the islands on which they breed. Several of these are situated near the one mentioned, and there is one near Cape Sable, a few miles from the most southern point of Nova Scotia, on which we saw thousands alighted on the trees as we were sailing along that coast on our way to Labrador. Some individuals begin to lay about the 19th of May or a few days earlier, while others have not finished the process until the middle of June. During this period they resort at certain hours to bare rocky islets, on which they copulate. At White Head Island, while we were seated on the edge of a beautiful sand-bar eating our dinner, we saw, on one of these rocks, a vast number, forming as it were a dense mass, which covered about half an acre. At twelve o'clock, we observed that all those which were not sitting on their eggs, flew over us and alighted on the sea, about half a mile from the shore, where they remained upwards of an hour, swimming gracefully but in silence all the while. A seal happening to raise its head above the water frightened them, and all raised their wings as if about to fly. Soon after they rose all at once, separated, and went off in search of food, but returned in less than an hour to the island, flying high and cackling loudly. A little before sunset all those unoccupied with incubation went off to the same rocky islands to roost, flying in silence, and mostly in files. It was curious to observe that, whenever a large flock made towards the sea cackling, all the Ducks about immediately flew off to a considerable distance, as if afraid of them; and we saw that these Gulls, although timorous in the presence of man, shew great courage in attacking predatory birds, such as Jays, Crows, Ravens, and even Hawks, which they pursued and forced into the deep woods, or drove away from the vicinity of their nests.

Shy and wary nearly in as great a degree as the Black-backed Gull, they

were with difficulty obtained, unless we approached them under cover. The least noise made them instantly leave their perch, and although there were six of us, each furnished with a good gun, and some sufficiently expert, not more than a dozen were killed that day, and all of them while flying. The moment one started, it would sound an alarm, on which hundreds would rise and sail over us, at such a height that it was useless to shoot at them. Now and then, one accidentally passing low over the woods, was brought down. While returning in the evening we shot one at a great height, having merely broken the tip of its wing. Having caught it, we placed it on the narrow path, on which it ran before us nearly to the house of the Governor, as Captain FRANKLAND is called. It offered no resistance, but bit severely, and now and then laid down to rest for a few moments. It ran fast enough to keep several yards before us, cackling all the while, and once suddenly made off from the path at a rapid rate.

Their flight is as strong as that of the Great Black-backed Gull, but more buoyant as well as graceful. During the love season their aerial evolutions are extremely beautiful; they pass through the air in wide circlings, at a great height, and then come down in curious zigzags until near the tops of the trees, or the surface of the sea. While in pursuit of fish, they dart in curved lines with great rapidity, frequently wheeling suddenly when over their prey, and falling towards it. When travelling, they pass indifferently over the land or the water, but generally at a considerable height. Their food consists principally of herrings, of which they destroy great numbers, following the shoals. They also feed on other fishes of small size, shrimps, crabs, and shell-fish, as well as on young birds and small quadrupeds, and suck all the eggs they can find. The rocky shores of the islands on which I found them breeding are covered with multitudes of sea-urchins, having short greenish spines, which gives them the semblance of a ball of moss. At low water the Herring Gulls frequently devour these animals, thrusting their bill through the shell, and sucking its contents. They also take up shells in the air, and drop them on the rocks to break them. We saw one that had met with a very hard mussel, take it up and drop it three times in succession, before it succeeded in breaking it, and I was much pleased to see the bird let it fall each succeeding time from a greater height than before. They seem to go out to sea in search of food at particular periods, setting out at the first ebb and returning to the shore as the tide rises.

The young are at first fed chiefly with shrimps and other small crustacea, which are picked up from the mud-bars or along the shores. They are then of a deep rusty colour all over, and when fully feathered they retain a good deal of that hue, but the feathers are edged with light grey or brown; the feet and legs are of a greenish-blue colour, including to purple; the bill dusky

or nearly black. In spring they acquire their full size, but still retain the grey and rusty plumage. The next year they shew much light ash-grey and white about the head, neck, and lower parts, the orange spot appears on the bill, the feet and legs are flesh-coloured, the tail still partially banded towards the extremity. At this age, however, I believe they breed, as I observed some coloured in the manner described, mated with older birds. The third spring they acquire the colouring represented in the plate.

I found no other species breeding on the same islands. Old and young associate together all the year round, excepting during the breeding season, when the latter separate and pursue their avocations together. The cry or cackling of this species, which is heard at a considerable distance, may be imitated by pronouncing the syllables *hac, hac, hac, cah, cah, cah*.

The Herring Gull has a greater range of migration along our coast and in the interior than any other American species. I have found it on our great lakes, and on the Ohio, Missouri and Mississippi, down to the Gulf of Mexico, during the autumnal months, and in winter along the shores of the latter, and all our eastern coasts. It may be said to be resident in the United States, as it breeds from off Boston to Eastport in Maine; but the greater number go farther north. We found the nests of some on the bare rocks of the Seal Islands off Labrador, but not on the coast itself. They were composed of dry plants and moss brought from the mainland. The birds kept by themselves, and appeared to be completely mastered by the Great Black-backed Gulls. On our return we saw old and young on the northern coast of Newfoundland, and on the different bays over which we passed.

I have represented an adult male, but not one of the largest, and a young bird shot in winter, which I have placed on a bunch of Racoon oysters, where it was standing when shot.

LARUS ARGENTATUS, Bonap. Syn., p. 360.

HERRING GULL, *Larus argentatus*, Nutt. Man., vol. ii. p. 304.

HERRING GULL, *Larus argentatus*, Aud. Orn. Biog., vol. iii. p. 588; vol. v. p. 638.

Male, 23, 53. Young, in winter, 18½, 51.

Abundant in autumn, winter, and early spring, from Texas along the whole Atlantic coast to Newfoundland. Breeds from the Bay of Fundy to Melville Island. Common in autumn on the Great Lakes, the Ohio, and Mississippi.

Adult Male in spring.

Bill shorter than the head, robust, compressed, higher near the end than at the base. Upper mandible with the dorsal line nearly straight at the base, declinate and arched towards the end, the ridge convex, the sides

slightly convex, the edges sharp, inflected, arcuato-declinate towards the end, the tip rather obtuse. Nasal groove rather long and narrow; nostril in its fore part, lateral, longitudinal, linear-oblong, wider, anteriorly pervious. Lower mandible with the angle long and narrow, the outline of the crura curved, the dorsal line beyond the prominence slightly concave, the sides erect and nearly flat, the edges sharp and inflected.

Head rather large, oblong, narrowed anteriorly. Neck of moderate length, strong. Body full. Feet of moderate length, rather slender; tibia bare below; tarsus somewhat compressed, covered anteriorly with numerous scutella, laterally with angular scales, behind with numerous small rectangular scales; hind toe very small and elevated, the fore toes of moderate length, rather slender, the fourth longer than the second, the third longest, all scutellate above, and connected by reticulated entire membranes, the lateral toes margined externally with a thick narrow membrane. Claws small, slightly arched, depressed, rounded, that of the middle toe with an expanded thin inner margin.

The plumage in general is close, full, elastic, very soft and blended, on the back rather compact. Wings very long, broad, acute, the first and second quills nearly equal, the rest of the primaries rather rapidly graduated; secondaries broad and rounded, the inner narrower. Tail of moderate length, even, of twelve rounded feathers.

Bill gamboge-yellow, with a large orange-red patch inclining to carmine towards the end of the lower mandible. Edges of eyelids gamboge; iris silvery white. Feet flesh-coloured; claws brownish-black. The head, neck, lower parts, rump and tail, are pure white; the back and wings pearl-grey or light bluish-grey, very slightly tinged with purple; the edges of the wing and the extremities of all the quills, are white. The first six quills are brownish-black towards the end, that colour including the outer webs and the greater part of the inner of the two first, and on the rest gradually diminishing, so as on the sixth merely to form a bar; first quill with a patch of white about an inch and a half long on both webs near the end; second with a circular white patch on the inner web, the tips of all white.

Length to end of tail 23 inches, to end of wings $24\frac{1}{2}$, to end of claws $21\frac{1}{2}$; extent of wings 53; wing from flexure 18; tail $7\frac{1}{4}$; bill along the ridge $2\frac{1}{2}$, along the edge of lower mandible 3; its depth at the angle $\frac{3}{4}$; tarsus $2\frac{1}{2}$; middle toe $2\frac{1}{2}$, its claws $\frac{4}{12}$. Weight 1 lb. 10 oz.

The Female is similar to the male, but somewhat less.

Young in November.

Bill brownish-black, paler at the base of the lower mandible. Edges of eyelids greenish-grey; iris hazel. Feet purplish flesh-colour; claws brownish-black. The general colour of the whole plumage is light purplish-grey,

the upper part of the head darker, the lower parts minutely mottled with pale yellowish-grey; the feathers of the upper parts, and the upper tail-coverts, irregularly edged and barred with greyish-white. Primary quills greyish-brown, their inner webs paler, their tips whitish; tail of the same colour, its base and outer webs of lateral feathers irregularly mottled with whitish, the tips brownish-white.

Length to end of tail $18\frac{3}{4}$ inches, to end of wings 20; extent of wings 51; wing from flexure 16; tail 6; bill along the ridge 2, along the edge of lower mandible $2\frac{1}{2}$; tarsus $2\frac{1}{4}$; middle toe 2, its claw $\frac{1}{2}$. Weight 22 oz.

From the examination of individuals of this species, it would appear that little reliance can be placed on the markings of the quills as affording a specific character. Four undoubted specimens of *Larus argentatus* now before me, have a white spot, varying in length from one to two inches, and including both webs, near the end of the *first* quill. One has no spot on the *second* quill; another has a spot on both webs of the *second* quill of one wing, and a smaller spot on part of the inner web of the same quill of the other wing; the third has a very small spot on part of the inner web of the same quill of both wings; the fourth has a large circular spot on the inner web of that quill also in both wings.

Male. The mouth is of the same structure as in *Larus marinus*, 1 inch 4 twelfths in width. The tongue is 1 inch $10\frac{1}{2}$ twelfths long, and similar to that of the species just named. Lobes of the liver 3 inches, and $3\frac{1}{4}$ inches; gall-bladder 1 inch 4 twelfths long, 8 twelfths wide. Œsophagus $10\frac{1}{2}$ inches long, at the commencement 2 inches wide, on the neck 1 inch 10 twelfths, and within the thorax 2 inches; it is thus very wide, and its walls are of moderate thickness, the muscular fibres distinct, and the inner coat longitudinally plicate. The stomach is proportionally small, of an elliptical form, 2 inches long, 1 inch 9 twelfths in breadth, its lateral muscles thin. It contains bones and scales of fishes. The epithelium in all respects as in *Larus marinus*. Cæca $\frac{1}{2}$ inch long, 3 twelfths broad; cloaca globular, $1\frac{1}{4}$ inches in diameter. Trachea 10 inches long, from 5 twelfths to 4 twelfths in breadth, moderately flattened, its rings 150, feeble. Bronchi wide, each of 28 half rings.



W. B.

Glaucous Gull Burgomaster.

Drawn from Nature by J. J. Audubon, F.R.S.E.L.S.

Adult male & Young first plumage.

Lat. Printed & (col. by.) T. Bowen, Philad.

GLAUCOUS GULL OR BURGOMASTER.

LARUS GLAUCUS, *Brunn.*

PLATE CCCCXLIX.—ADULT MALE AND YOUNG.

I found this species on the coast of Labrador in very small numbers, all paired, in the month of July; but our endeavours to discover their nests were unavailing, and their shyness, which surpassed even that of the Great Black-backed Gull, prevented us from seeing much of their habits. I have never met with one on any part of our Atlantic coast, and I am much disposed to believe that those which may retire from the Arctic regions, where they are numerous, follow the north-west shores of America, as is indeed the case with many of the hyperborean birds, they giving an unaccountable preference to that side of the continent. It is true that I have often been told at Boston and New York that the Glaucous Gull had not unfrequently been procured there; but in no instance could I place any reliance upon the report, for when the supposed Glaucous Gull was shown to me, it proved to be merely a large specimen of the Herring Gull, *Larus argentatus*. Dr. RICHARDSON, who had good opportunities of observing this bird, speaks of it as follows:—

“This large and powerful Gull inhabits Greenland, the Polar Seas, Baffin’s Bay, and the adjoining straits and coasts, in considerable numbers, during the summer. Its winter resorts in America have not been mentioned by authors; and the Prince of MUSIGNANO informs us, that it is exceedingly rare in the United States. It is notoriously greedy and voracious, preying not only on fish and small birds, but on carrion of every kind. One specimen killed on Captain Ross’ expedition disgorged an auk when it was struck, and proved, on dissection, to have another in its stomach. Unless when impelled to exertion by hunger, it is rather a shy, inactive bird, and has little of the clamorousness of others of the genus. There is a considerable variety in the size of individuals. Captain SABINE found most of his specimens smaller than the *L. marinus*, but the largest individual of either species which he met with, was a male of *L. glaucus*, killed in Barrow’s Strait. Its length was thirty-two inches; extent of wing sixty-five inches; weight four pounds and a quarter. Its tarsus was three inches and a half long, and its bill, which was prodigiously strong and arched, measured upwards of four

inches. The eggs of this Gull are pale purplish-grey, with scattered spots of umber-brown, and subdued lavender-purple."

My figures were taken from specimens kindly presented to me by my friend Captain JAMES CLARKE ROSS, R. N.

LARUS GLAUCUS, Bonap. Syn., p. 361.

LARUS GLAUCUS, *Burgomaster Gull*, Swains. and Rich. F. Bor. Amer., vol. ii. p. 416.

GLAUCOUS GULL OR BURGOMASTER, Nutt. Man., vol. ii. p. 306.

GLAUCOUS GULL OR BURGOMASTER, *Larus glaucus*, Aud. Orn. Biog., vol. v. p. 59.

Adult, 30 ; wing, 19½.

Met with in Labrador in summer. Baffin's Bay and Arctic Seas generally. Not observed within the limits of the United States.

Adult Male.

Bill shorter than the head, stout, compressed, higher near the end than at the base. Upper mandible with the dorsal line nearly straight for half its length, declinate and arched towards the end, the ridge convex, the sides very rapidly sloping and slightly convex, the edges sharp and somewhat inflected, the tip rather obtuse. Nasal groove rather long and narrow ; nostrils in its fore part, lateral, longitudinal, linear-oblong, wider anteriorly, pervious. Lower mandible with the angle long and narrow, the outline of the crura decurved toward their junction, where there is a prominence, beyond which the outline ascends and is slightly concave, the sides erect and nearly flat, the edges sharp and a little inflected.

Head large, ovato-oblong, narrowed anteriorly. Neck of moderate length, strong. Body full. Feet of moderate length, rather slender ; tibia bare for three-quarters of an inch ; tarsus somewhat compressed, covered anteriorly with numerous much curved scutella, laterally with angular scales, behind with numerous small rectangular scales ; hind toe very small and elevated, the fore toes of moderate length, slender, the fourth longer than the second, the third longest, all scutellate above, and connected by reticulated entire membranes, the lateral toes margined externally with a thick narrow membrane. Claws small, slightly arched, depressed, rounded, that of the middle toe with an expanded thin inner margin.

The plumage is very full, close, elastic, soft, and blended, on the back somewhat compact. Wings very long, rather broad, acute ; the first quill scarcely two-twelfths of an inch shorter than the second, which is longest, the rest of the primaries rapidly graduated ; secondaries broad and rounded. Tail of moderate length, nearly even, being slightly rounded, of twelve broad rounded feathers.

Bill gamboge-yellow, with a carmine patch towards the end of the lower



Great Black backed Gull.

Male.

mandible, and the edges of both mandibles at the base of the same colour. Edges of eyelids red, iris yellow. Feet flesh-coloured, claws yellowish. The head, neck, lower parts, rump, and tail, are pure white; the back and wings light greyish-blue; the edges of the wing, and a large portion toward the end of all the quills, white.

Length to end of tail 30 inches; bill along the ridge $2\frac{9}{12}$, along the edge $3\frac{1}{2}$; wing from flexure $19\frac{1}{2}$; tail $8\frac{3}{4}$; tarsus $2\frac{1}{2}$; hind toe $\frac{7}{12}$, its claw $\frac{3}{12}$; second toe $\frac{1}{2}$, its claw $\frac{1}{12}$; middle toe $2\frac{7}{12}$, its claw $\frac{6}{12}$; outer toe $2\frac{1}{4}$, its claw $\frac{1}{12}$.

The Female, which is somewhat less, resembles the male.

Young in full plumage.

The bill is yellow to a little beyond the nostrils, black at the end; the feet flesh-coloured, the claws dusky. The iris brown. The general colour of the plumage is very pale yellowish-brown; the feathers of the back with a large dusky spot towards the end; the quills and tail-feathers barred with the same.

THE GREAT BLACK-BACKED GULL.

LARUS MARINUS, *Linn.*

PLATE CCCCL.—MALE.

High in the thin keen air, far above the rugged crags of the desolate shores of Labrador, proudly sails the tyrant Gull, floating along on almost motionless wing, like an Eagle in his calm and majestic flight. On widely extended pinions, he moves in large circles, constantly eyeing the objects below. Harsh and loud are his cries, and with no pleasant feeling do they come on the winged multitudes below. Now onward he sweeps, passes over each rocky bay, visits the little islands, and shoots off towards the mossy heaths, attracted perhaps by the notes of the Grouse or some other birds. As he flies over each estuary, lake or pool, the breeding birds prepare to defend their unfledged broods, or ensure their escape from the powerful beak of their remorseless spoiler. Even the shoals of the finny tribes sink deeper into the waters as he approaches; the young birds become silent in their

necks or seek for safety in the clefts of the rocks; the Guillemots and Gannets dread to look up, and the other Gulls, unable to cope with the destroyer, give way as he advances. Far off among the roaring billows, he spies the carcass of some monster of the deep, and, on steady wing, glides off towards it. Alighting on the huge whale, he throws upwards his head, opens his bill, and, louder and fiercer than ever, sends his cries through the air. Leisurely he walks over the putrid mass, and now, assured that all is safe, he tears, tugs, and swallows piece after piece, until he is crammed to the throat, when he lays himself down surfeited and exhausted, to rest for awhile in the feeble sheen of the northern sun. Great, however, are the powers of his stomach, and ere long the half-putrid food which, vulture-like, he has devoured, is digested. Like all gluttons, he loves variety, and away he flies to some well-known isle, where thousands of young birds or eggs are to be found. There, without remorse, he breaks the shells, swallows their contents, and begins leisurely to devour the helpless young. Neither the cries of the parents, nor all their attempts to drive the plunderer away, can induce him to desist until he has again satisfied his ever-craving appetite. But although tyrannical, the Great Gull is a coward, and meanly does he sneak off when he sees the Skua fly up, which, smaller as it is, yet evinces a thoughtless intrepidity, that strikes the ravenous and merciless bird with terror.

If we compare this species with some other of its tribe, and mark its great size, its powerful flight, and its robust constitution, we cannot but wonder to find its range so limited during the breeding season. Few individuals are to be found northward of the entrance into Baffin's Bay, and rarely are they met with beyond this, as no mention is made of them by Dr. RICHARDSON in the *Fauna Boreali-Americana*. Along our coast, none breed farther south than the eastern extremity of Maine. The western shores of Labrador, along an extent of about three hundred miles, afford the stations to which this species resorts during spring and summer: there it is abundant, and there it was that I studied its habits.

The farthest limits of the winter migrations of the young, so far as I have observed, are the middle portions of the eastern coasts of the Floridas. While at St. Augustine, in the winter of 1831, I saw several pairs keeping company with the young Brown Pelican, more as a matter of interest than of friendship, as they frequently chased them as if to force them to disgorge a portion of their earnings, acting much in the same manner as the *Lestris* does toward the smaller Gulls, but without any effect. They were extremely shy, alighted only on the outer edges of the outer sand-bars, and could not be approached, as they regularly walked off before my party the moment any of us moved towards them, until reaching the last projecting point, they flew off, and never stopped while in sight. At what period they left that

coast I am unable to say. Some are seen scattered along our sea-shores, from the Floridas to the middle States, there being but few old birds among them ; but the species does not become abundant until beyond the eastern extremities of the Connecticut and Long Island, when their number greatly increases the farther you proceed. On the whole of that extensive range, these birds are very shy and wary, and those which are procured are merely "chance shots." They seldom advance far up the bays, unless forced to do so by severe weather or heavy gales ; and although I have seen this bird on our great lakes, I do not remember having ever observed an individual on any of our eastern rivers, at a distance from the sea, whereas the *Larus argentatus* is frequently found in such places.

Towards the commencement of summer, these wandering birds are seen abandoning the waters of the ocean to tarry for awhile on the wild shores of Labrador, dreary and desolate to man, but to them delightful as affording all that they can desire. One by one they arrive, the older individuals first. As they view from afar the land of their birth, that moment they emit their loud cries, with all the joy a traveller feels when approaching his loved home. The males sooner or later fall in with the females of their choice, and together they proceed to some secluded sand-bar, where they fill the air with their furious laughs until the rocks echo again. Should the student of nature happen to be a distant spectator of these meetings, he too must have much enjoyment. Each male bows, moves around his mate, and no doubt discloses to her the ardour of his love. Matters are managed to the satisfaction of all parties, yet day after day for awhile, at the retreat of the waters, they meet as if by mutual agreement. Now you see them dressing their plumage, now partially expanding their wings to the sun ; some lay themselves comfortably down on the sand, while others, supported by one foot, stand side by side. The waters again advance, and the Gulls all move off in search of food. At length the time has arrived ; small parties of a few pairs fly towards the desert isles. Some remain in the nearest to prepare their nests, the rest proceed, until each pair has found a suitable retreat, and before a fortnight has elapsed, incubation has commenced.

The nest of this species is usually placed on the bare rock of some low island, sometimes beneath a projecting shelf, sometimes in a wide fissure. In Labrador it is formed of moss and sea-weeds carefully arranged, and has a diameter of about two feet, being raised on the edges to the height of five or six inches, but seldom more than two inches thick in the centre, where feathers, dry grass, and other materials are added. The eggs are three, and in no instance have I found more. They are two inches and seven-eighths in length, by two inches and one-eighth in breadth, broadly ovate, rough but not granulated, of a pale earthy greenish-grey colour, irregularly blotched

and spotted with brownish-black, dark umber, and dull purple. Like those of most other Gulls, they afford good eating. This species lays from the middle of May to that of June, and raises only one brood in the season. The birds never leave their eggs for any length of time, until the young make their appearance. Both sexes incubate, the sitting bird being supplied with food by the other. During the first week, the young are fed by having their supplies disgorged into their bill, but when they have attained some size, the food is dropped beside or before them. When they are approached by man, they walk with considerable speed towards some hiding place, or to the nearest projecting ledge, beneath which they squat. When five or six weeks old, they take to the water, to ensure their escape, and swim with great buoyancy. If caught, they cry in the manner of their parents. On the 18th of June, several small ones were procured and placed on the deck of the Ripley, where they walked with ease and picked up the food thrown to them. As soon as one was about to swallow its portion, another would run up, seize it, tug at it, and if stronger, carry it off and devour it. On the 23d of that month, two individuals, several weeks old, and partly fledged, were also brought on board. Their notes, although feeble, perfectly resembled those of their parents. They ate greedily of everything that was offered to them. When fatigued they sat with their tarsi placed on the ground and extended forward, in the manner of all the Herons, which gave them a very ludicrous appearance. Ere a month had elapsed, they appeared to have formed a complete acquaintance with the cook and several of the sailors, had become quite fat, and conducted themselves much like Vultures, for if a dead Duck, or even a Gull of their own species, were thrown to them, they would tear it in pieces, drink the blood, and swallow the flesh in large morsels, each trying to rob the others of what they had torn from the carcass. They never drank water, but not unfrequently washed the blood and filth from their bills, by immersing them and then shaking the head violently. These birds were fed until they were nearly able to fly. Now and then, the sailors would throw them overboard while we were in harbour. This seemed to gratify the birds as well as the sailors, for they would swim about, wash themselves, and dress their plumage, after which they would make for the sides, and would be taken on board. During a violent gale, one night, while we were at anchor in the harbour of Bras d'Or, our bark rolled heavily, and one of our pets went over the side and swam to the shore, where, after considerable search next day, it was found shivering by the lee of a rock. On being brought to its brothers, it was pleasant to see their mutual congratulations, which were extremely animated. Before we left the coast, they would sometimes fly of their own accord into the water to bathe, but could not return to the deck without assistance, although they

endeavoured to do so. I had become much attached to them, and now and then thought they looked highly interesting, as they lay panting on their sides on the deck, although the thermometer did not rise above 55°. Their enmity to my son's pointer was quite remarkable, and as that animal was of a gentle and kindly disposition, they would tease him, bite him, and drive him fairly from the deck into the cabin. A few days after leaving St. George's Bay in Newfoundland, we were assailed by a violent gale, and obliged to lie-to. Next day one of the Gulls was washed overboard. It tried to reach the vessel again, but in vain; the gale continued; the sailors told me the bird was swimming towards the shore, which was not so far off as we could have wished, and which it probably reached in safety. The other was given to my friend Lieutenant GREEN of the United States army, at Eastport in Maine. In one of his letters to me the following winter, he said that the young *Larus marinus* was quite a pet in the garrison, and doing very well, but that no perceptible change had taken place in its plumage.

On referring to my journal again, I find that while we were at anchor at the head of St. George's Bay, the sailors caught many codlings, of which each of our young Gulls swallowed daily two, measuring from eight to ten inches in length. It was curious to see them after such a meal: the form of the fish could be traced along the neck, which for awhile they were obliged to keep stretched out; they gaped and were evidently suffering; yet they would not throw up the fish. About the time the young of this species are nearly able to fly, they are killed in considerable numbers on their breeding-grounds, skinned and salted for the settlers and resident fishermen of Labrador and Newfoundland, at which latter place I saw piles of them. When they are able to shift for themselves, their parents completely abandon them, and old and young go separately in search of food.

The flight of the Great Black-backed Gull is firm, steady, at times elegant, rather swift, and long protracted. While travelling, it usually flies at the height of fifty or sixty yards, and proceeds in a direct course, with easy, regulated flappings. Should the weather prove tempestuous, this Gull, like most others, skims over the surface of the waters or the land within a few yards or even feet, meeting the gale, but not yielding to it, and forcing its way against the strongest wind. In calm weather and sunshine, at all seasons of the year, it is fond of soaring to a great height, where it flies about leisurely and with considerable elegance for half an hour or so, in the manner of Eagles, Vultures, and Ravens. Now and then, while pursuing a bird of its own species, or trying to escape from an enemy, it passes through the air with rapid boundings, which, however, do not continue long, and as soon as they are over it rises and slowly sails in circles. When man encroaches

on its domains, it keeps over him at a safe distance, not sailing so much as moving to either side with continued flappings. To secure the fishes on which it more usually preys, it sweeps downwards with velocity, and as it glides over the spot, picks up its prey with its bill. If the fish be small, the Gull swallows it on wing, but if large, it either alights on the water, or flies to the nearest shore to devour it.

Although a comparatively silent bird for three-fourths of the year, the Great Black-backed Gull becomes very noisy at the approach of the breeding season, and continues so until the young are well fledged, after which it resumes its silence. Its common notes, when it is interrupted or surprised, sound like *cack, cack, cack*. While courting, they are softer and more lengthened, and resemble the syllables *cawah*, which are often repeated as it sails in circles or otherwise, within view of its mate or its place of abode.

This species walks well, moving firmly and with an air of importance. On the water it swims lightly but slowly, and may soon be overtaken by a boat. It has no power of diving, although at times, when searching for food along the shores, it will enter the water on seeing a crab or a lobster, to seize it, in which it at times succeeds. I saw one at Labrador plunge after a large crab in about two feet of water, when, after a tug, it hauled it ashore, where it devoured it in my sight. I watched its movements with a glass, and could easily observe how it tore the crab to pieces, swallowed its body, leaving the shell and the claws, after which it flew off to its young and disgorged before them.

It is extremely voracious, and devours all sorts of food excepting vegetables, even the most putrid carrion, but prefers fresh fish, young birds, or small quadrupeds, whenever they can be procured. It sucks the eggs of every bird it can find, thus destroying great numbers of them, as well as the parents, if weak or helpless. I have frequently seen these Gulls attack a flock of young Ducks while swimming beside their mother, when the latter, if small, would have to take to wing, and the former would all dive, but were often caught on rising to the surface, unless they happened to be among rushes. The Eider Duck is the only one of the tribe that risks her life, on such occasions, to save that of her young. She will frequently rise from the water, as her brood disappear beneath, and keep the Gull at bay, or harass it until her little ones are safe under some shelving rocks, when she flies off in another direction, leaving the enemy to digest his disappointment. But while the poor Duck is sitting on her eggs in any open situation, the marauder assails her, and forces her off, when he sucks the eggs in her very sight. Young Grouse are also the prey of this Gull, which chases them over the moss-covered rocks, and devours them before their parents. It follows the shoals of fishes for hours at a time, and usually with great success.

On the coast of Labrador, I frequently saw these birds seize flounders on the edges of the shallows ; they often attempted to swallow them whole, but, finding this impracticable, removed to some rock, beat them, and tore them to pieces. They appear to digest feathers, bones, and other hard substances with ease, seldom disgorging their food, unless for the purpose of feeding their young or mates, or when wounded and approached by man, or when pursued by some bird of greater power. While at Boston in Massachusetts, one cold winter morning, I saw one of these Gulls take up an eel, about fifteen or eighteen inches in length, from a mud bank. The Gull rose with difficulty, and after some trouble managed to gulp the head of the fish, and flew towards the shore with it, when a White-headed Eagle made its appearance, and soon overtook the Gull, which reluctantly gave up the eel, on which the Eagle glided towards it, and, seizing it with its talons, before it reached the water, carried it off.

This Gull is excessively shy and vigilant, so that even at Labrador we found it difficult to procure it, nor did we succeed in obtaining more than about a dozen old birds, and that only by stratagem. They watched our movements with so much care as never to fly past a rock behind which one of the party might be likely to lie concealed. None were shot near the nests when they were sitting on their eggs, and only one female attempted to rescue her young, and was shot as she accidentally flew within distance. The time to surprise them was during violent gales, for then they flew close to the tops of the highest rocks, where we took care to conceal ourselves for the purpose. When we approached the rocky islets on which they bred, they left the place as soon as they became aware of our intentions, cackled and barked loudly, and when we returned, followed us at a distance more than a mile.

They begin to moult early in July. In the beginning of August the young were seen searching for food by themselves, and even far apart. By the 12th of that month they had all left Labrador. We saw them afterwards along the coast of Newfoundland, and while crossing the Gulf of St. Lawrence, and found them over the bays of Nova Scotia, as we proceeded southward. When old, their flesh is tough and unfit for food. Their feathers are elastic, and good for pillows and such purposes, but can rarely be procured in sufficient quantity.

The most remarkable circumstance relative to these birds is, that they either associate with another species, giving rise to a hybrid brood, or that when very old they lose the dark colour of the back, which is then of the same tint as that of the *Larus argentatus*, or even lighter. This curious fact was also remarked by the young gentlemen who accompanied me to Labrador ; and although it is impossible for me to clear up the doubts that

may be naturally entertained on this subject, whichever of the two suppositions is adopted, the fact may yet be established and accounted for by persons who may have better opportunities of watching them and studying their habits. No individuals of *Larus argentatus* were, to my knowledge, seen on that coast during the three months which I passed there, and the fishermen told us that the "saddle-backs were the only large Gulls that ever breed there."

This bird must be of extraordinary longevity, as I have seen one that was kept in a state of captivity more than thirty years. The following very interesting account of the habits of a partially domesticated individual I owe to my esteemed and learned friend Dr. NEILL of Edinburgh.

"In the course of the summer of 1818, a 'big seorie' was brought to me by a Newhaven fisher-boy, who mentioned that it had been picked up at sea, about the mouth of the Frith of Forth. The bird was not then fully fledged: it was quite uninjured: it quickly learned to feed on potatoes and kitchen refuse, along with some Ducks; and it soon became more familiar than they, often peeping in at the kitchen window in hopes of getting a bit of fat meat, which it relished highly. It used to follow my servant PEGGY OLIVER about the doors, expanding its wings and vociferating for food. After two moults I was agreeably surprised to find it assuming the dark plumage of the back, and the shape and colour of the bill of the *Larus marinus*, or Great Black-backed Gull; for I had hitherto regarded it as merely a large specimen of the Lesser Black-backed (*L. fuscus*), a pair of which I then possessed, but which had never allowed the new comer to associate with them. The bird being perfectly tame, we did not take the precaution of keeping the quills of one wing cut short, so as to prevent flight; indeed, as it was often praised as a remarkably large and noble looking Sea-maw, we did not like to disfigure it. In the winter of 1821-2, it got a companion in a cock-heron, which had been wounded in Coldingham Muir, brought to Edinburgh alive, and kept for some weeks in a cellar in the old college, and then presented to me by the late Mr. JOHN WILSON, the janitor,—a person remarkably distinguished for his attachment to natural history pursuits. This Heron we succeeded in taming completely, and it still (1835) remains with me, having the whole garden to range in, the trees to roost upon, and access to the loch at pleasure, the loch being the boundary of my garden. Some time in the spring of 1822, the large Gull was missing; and we ascertained (in some way that has now escaped my memory) that it had not been stolen, nor killed, as we at first supposed, but had taken flight, passing northwards over the village, and had probably therefore gone to sea. Of course I gave up all expectation of ever hearing more of it. It was not without surprise, therefore, that on going home one day in the end of October of that year, I

heard my servant calling out with great exultation, 'Sir, Big Gull is come back!' I accordingly found him walking about in his old haunts in the garden, in company with, and recognising (as I am firmly persuaded) his old friend the Heron. He disappeared in the evening, and returned in the morning, for several days; when PEGGY OLIVER thought it best to secure him. He evidently did not like confinement, and it was concerted that he should be allowed his liberty, although he ran much risk of being shot on the mill-pond by youthful sportsmen from Edinburgh. After this temporary captivity, he was more cautious and shy than formerly; but still he made almost daily visits to the garden, and picked up herrings or other food laid down for him. In the beginning of March 1823 his visits ceased; and we saw no more of him till late in the autumn of that year. These winter visits to Canonmills, and summer excursions to the unknown breeding-place, were continued for years with great uniformity: only I remarked that after the Gull lost his protectress, who died in 1826,* he became more distant in his manners. In my note-book, under date of 26th October, 1829, I find this entry: 'Old PEGGY'S Great Black-backed Gull arrived at the pond this morning, the seventh (or eighth) winter he has regularly returned. He had a scorie with him, which was soon shot on the loch, by some cockney sportsman.' The young bird, doubtless one of his offspring, had its wing shattered, and continued alive in the middle of the pond, occasionally screaming piteously, for two or three days, till relieved by death. The old Gull immediately abandoned the place for that winter, as if reproaching us for cruelty. By next autumn, however, he seemed to have forgotten the injury; for, according to my record, '30th October, 1830. The Great Black-backed Gull once more arrived at Canonmills garden.' The periods of arrival, residence, and departure were nearly similar in the following year. But in 1832, not only October, but the months of November and December passed away without Gull's making his appearance, and I of course despaired of again seeing him. He did, however, at length arrive. The following is the entry in my common-place book: 'Sunday, 6th January, 1833. This day the Great Black-back returned to the mill-pond, for (I think) the eleventh season. He used to re-appear in October in former years, and I concluded him dead or shot. He recognised my voice, and hovered over my head.' He disappeared early in March as usual, and reappeared at

* "PEGGY OLIVER was remarkable for the zeal and taste she displayed in the domesticating of uncommon animals, as well as in the culture of plants: her expertness in the latter department is noticed and praised by Mr. Loudon in his *Gardener's Magazine*. Her funeral was attended by some of the most distinguished naturalists here, and, among others, by your friend Dr. MACCULLOCH of Pictou, who happened to be in Edinburgh at the time, and whose friendship I have also the happiness to enjoy."

Canonmills on 23d December, 1833, being a fortnight earlier than the date of his arrival in the preceding season, but six weeks later than the original period of reappearance. He left in the beginning of March as usual, and I find from my notes that he 'reappeared on 30th December, 1834, for the season, first hovering around and then alighting on the pond as in former years.' The latest entry is, '11th March, 1835. The Black-backed Gull was here yesterday, but has not been seen to-day; nor do I expect to see him till November.'

"This Gull has often attracted the attention of persons passing the village of Canonmills, by reason of its sweeping along so low or near the ground, and on account of the wide expanse of wing which it thus displays. It is well known to the boys of the village as 'NEILL's Gull,' and has, I am aware, owed its safety more than once to their interference, in informing passing sportsmen of its history. When it first arrives in autumn, it is in the regular habit of making many circular sweeps around the pond and garden, at a considerable elevation, as if reconnoitring; it then gradually lowers its flight, and gently alights about the centre of the pond. Upon the gardener's mounting the garden-wall with a fish in his hand, the Gull moves towards the overhanging spray of some large willow-trees, so as to catch what may be thrown to him, before it sinks in the water. There can be no doubt whatever of the identity of the bird. Indeed, he unequivocally shows that he recognises my voice when I call aloud 'Gull, Gull,' for whether he be on wing or afloat, he immediately approaches me.

"A few pairs of the Great Black-backed Gull breed at the Bass Rock yearly, and it seems highly probable that my specimen had originally been hatched there. If I may be allowed a conjecture, I would suppose that, after attaining maturity, he for some years resorted to the same spot for the purpose of breeding; but that of late years, having lost his mate or encountered some other disaster, he has extended his migration for that purpose to some very distant locality, which has rendered his return to winter quarters six weeks later than formerly."

LARUS MARINUS, Linn. Syst. Nat., vol. i. p. 225.

BLACK-BACKED GULL OF COBB, Nutt. Man., vol. ii. p. 308.

GREAT BLACK-BACKED GULL, *Larus marinus*, Aud. Orn. Biog., vol. iii. p. 305; vol. v. p. 636.

Male, 29½, 67.

Not uncommon during winter as far south as Florida, the young especially. Common from New York to Labrador, where it breeds. Lake Erie, Ontario, the St. Lawrence, Ohio, and Mississippi rivers. Columbia river.

Adult Male in summer.

Bill shorter than the head, robust, compressed, higher near the end than at the base. Upper mandible with the dorsal line nearly straight at the base, declinate and arched towards the end, the ridge convex, the sides slightly convex, the edges sharp, inflected, arcuate-declinate towards the end, the tip rather obtuse. Nasal groove rather long and narrow; nostril in its fore part, lateral, longitudinal, linear, wider anteriorly, pervious. Lower mandible with the angle long and narrow, the outline of the crura rather concave, as is that of the remaining part of the mandible, a prominent angle being formed at their meeting, the sides nearly flat, the edges sharp and inflected.

Head rather large, oblong, narrowed anteriorly. Neck of moderate length, strong. Body full. Wings long. Feet of moderate length, rather slender; tibia bare below; tarsus somewhat compressed, covered anteriorly with numerous scutella, laterally with angular scales, behind with numerous small oblong scales, hind toe very small and elevated, the fore toes of moderate length, rather slender, the fourth longer than the second, the third longest, all scutellate above, and connected by reticulated entire membranes; the lateral toes margined externally with a narrow membrane. Claws small, slightly arched, depressed, rounded, that of middle toe with an expanded inner margin.

The plumage in general is close, full, elastic, very soft and blended, on the back rather compact. Wings very long, broad, acute, the first quill longest, the second scarcely shorter, the rest of the primaries rather rapidly graduated; secondaries broad and rounded, the inner narrower. Tail of moderate length, even, of twelve rounded feathers.

Bill gamboge-yellow, the lower mandible bright carmine towards the end. Edges of eyelids bright carmine, iris silvery. Feet yellow, claws black. The head, neck, and all the lower parts, pure white; back and wings deep blackish-grey tinged with purple, or dark slate-colour; the rump and tail white, as are the edges of the wing, and a large portion of the extremities of all the quills; the second, third, fourth, and fifth primaries have a broad band of black across their ends, the inner web only of the second being so marked, in some specimens however both webs. The œsophagus is very large, the gizzard small, the intestine four feet long, and about the thickness of a goose quill.

Length to end of tail $29\frac{3}{4}$ inches, to end of wings $31\frac{1}{2}$, to end of claws $29\frac{1}{4}$; extent of wings 67; wing from flexure 20; tail 9; bill along the ridge $2\frac{1}{2}$, along the edge of lower manible $3\frac{1}{2}$; its depth at the angle 1, at the base $\frac{1}{2}$; tarsus $3\frac{1}{2}$; middle toe $2\frac{1}{2}$, its claw $\frac{1}{2}$. Weight 3 lbs.

The Female is similar to the male, but considerably less.

The Young, when fledged, have the bill brownish-black, the iris dark

brown, the feet as in the adult. The head and neck are greyish-white, streaked with pale brownish grey; the upper parts mottled with brownish-black, brownish-grey, and dull white, the rump paler. The primary quills blackish-brown, slightly tipped with brownish-white; the tail-feathers white, with a large brownish-black patch towards the end, larger on the middle feathers, which are also barred towards the base with dusky. The lower parts are greyish-white, the sides and lower tail-coverts obscurely mottled with greyish-brown.

Male, from Dr. T. M. BREWER. The mouth is of moderate width, its breadth being 1 inch 9 twelfths; the palate flat, with two very prominent papillate ridges, and four series of intervening papillæ; on the upper mandible beneath are five ridges, and the horny edges are prominent and thin, but very strong; the posterior aperture of the nares linear, 1 inch 9 twelfths long. The tongue is 2 inches 2 twelfths in length, fleshy above, horny beneath, rather narrow, deeply channelled, the base emarginate and finely papillate, the tip narrowly rounded.

The left lobe of the liver is larger than the right, which, however, is more elongated, being 4 inches in length, the other 3 inches; the gall-bladder oblong, 1 inch 2 twelfths by 7 twelfths. There is a larger accumulation of fat under the parietes of the abdomen, and appended to the stomach.

The œsophagus is 14 inches long; at the commencement its width is $2\frac{1}{2}$ inches, it then contracts to 1 inch 9 twelfths, at the lower part of the neck enlarges to 2 inches, and towards the proventriculus to $2\frac{1}{2}$ inches; it then suddenly contracts at the commencement of the stomach. This organ is rather small, and of an oblong form, $2\frac{1}{2}$ inches long, 1 inch 9 twelfths broad; the lateral muscles of moderate size, the inferior prominent, the tendons large and radiated; the epithelium extremely dense, thick; with strong longitudinal ridges, and of a bright red colour. It contains remains of crabs. The proventricular glands, which are very small, being $1\frac{1}{2}$ twelfths in length, and $\frac{1}{4}$ twelfth broad, form a belt $1\frac{1}{4}$ inches in breadth, traversed by very prominent rugæ, continuous with those of the stomach. The inner membrane of the œsophagus is strongly plaited, and that part is capable of being distended to 3 inches. The intestine is 50 inches long, its greatest width $4\frac{1}{2}$ twelfths; the cœca $\frac{1}{2}$ inch long, $\frac{1}{4}$ inch wide, their distance from the extremity 5 inches, the rectum is 8 twelfths in width, and the cloaca forms a globular dilatation $1\frac{1}{2}$ inches in diameter.

The trachea is 12 inches long; at the top $7\frac{1}{4}$ twelfths wide, gradually contracting to $4\frac{1}{2}$ twelfths, considerably flattened, its rings slightly ossified, 148 in number, of moderate breadth, very thin, contracted in the middle line before and behind; the last half ring is large, moderately arched. In this, as in all the other Gulls, there is a pair of slender muscles arising from the

sides of the thyroid bone in front, separating from the trachea, attaching themselves to the subcutaneous cellular tissue, and inserted into the furcula. Another pair arise from the same bone in front, spreading over the whole anterior surface of the trachea, then become collected on the sides, send off a slip to the costal process of the sternum, and continue narrow, to be inserted into the last arched half-ring of the trachea ; thus forming what is called a single pair of inferior laryngeal muscles. Bronchi wide, each with 28 half rings.

FAMILY XLIII.—PROCELLARINÆ. FULMARS.

Bill generally shorter than the head, moderately stout, compressed ; upper mandible with the ridge formed of two generally united plates, at the anterior part of which, usually about half the length of the bill, are the nostrils ; the sides separated by a groove, the tip a decurved, compressed, pointed unguis ; lower mandible with the angle very long and narrow, the tip more or less decurved. Head of moderate size, ovate ; neck of moderate length ; body compact. Feet of ordinary length, rather slender ; tibia bare below for a short space ; tarsus a little compressed, anteriorly scutellate ; toes four, the first extremely small and elevated, with a conical deflected claw ; anterior toes webbed ; the third and fourth nearly equal. Claws arched, compressed, acute. Plumage full, soft, rather compact above. Wings long, rather broad, pointed, the first quill generally longest. Tail short, of from twelve to sixteen feathers. Œsophagus very wide, often enormously dilated, especially at its lower part, stomach small, moderately muscular ; intestine of moderate length ; cœca rather long ; cloaca oblong or globular. Trachea simple, with a single pair of inferior laryngeal muscles.

GENUS I.—LESTRIS, *Illiger*. JAGER.

Bill shorter than the head, strong, slightly compressed, straight, with the tip curved; upper mandible with the dorsal line nearly straight, toward the tip decurved, the ridge broad and convex, formed by two plates, which overlap the nostrils, the sides narrow and convex, the edges sharp and inflected, the tip or unguis decurved, compressed, acute; nasal groove long, narrow; the nostrils in its fore part medial, lateral, longitudinal, broad before, extremely narrow behind, open and pervious; lower mandible with the angle long and narrow, a slight prominence at its extremity, beyond which the dorsal line is slightly concave, the sides erect, and slightly convex, the edges sharp and inflected, the tip obliquely truncate. Head rather large; neck of moderate length; body rather full. Feet of moderate length, rather stout; tibia bare at its lower part, and rough all round, with small convex scales; tarsus compressed behind and scabrous, anteriorly scutellate; hind toe extremely small and elevated; fore toes of moderate size, connected by convex webs, the third toe longest, the fourth little shorter. Claws strong, much curved, very acute, compressed. Plumage full, soft, blended, on the back rather compact. Wings very long, rather broad, pointed, the first quill longest. Tail of moderate length, or elongated, of twelve feathers, of which the middle are longest. Tongue broadly channelled above, contracted and induplicate toward the end, with the point slit; œsophagus very wide; stomach small, moderately muscular, with the epithelium thin, dense, and longitudinally rugous; intestine rather short and wide; cœca rather long; cloaca oblong.



Pomeran. Jaeger.
Stella Fennica.

Drawn from Nature by J. J. Audubon, F.R.S.E.S.

Engraved & Col'd by J. T. Bowen, Philad'a

THE POMARINE JAGER.

LESTRIS POMARINUS, *Temm.*

PLATE CCCCLI.—FEMALE.

This bird I never had an opportunity of examining until I visited Labrador; nor am I able to give you much information respecting its habits as obtained by my own observation, and therefore I shall take the liberty of adding to my description such notices as I may judge interesting, taken from the works of authors who, having seen for themselves, are entitled to credit.

While sailing towards the harbour of Little Macatina, and yet about forty miles distant from it, although not far from the shore, we observed a bird of this species approaching the vessel. It flew in the manner of the Pigeon Hawk, to my account of which I may refer you, alighted on the water like a Gull, and fed on some codfish's liver that had been thrown overboard for the purpose of attracting it. Several small Petrels joined it, but it did not come within shot, and the sea was too rough for even our whale-boat. On the 30th of July the young men of my party brought me a fine adult female, in excellent order, from which I drew the figure in the plate. A few days after we experienced a very heavy gale while in the harbour of Bras d'Or, during the continuance of which twenty or thirty of these birds came about us, although none of them approached within shot, and no boat could have ridden the furious waves without imminent danger. On that occasion, however, I was enabled to observe some of their habits. They flew wildly about, yet with much grace, moving rapidly to and fro, now struggling against the blast, now bearing off and drifting to a considerable distance. Many Gulls were flying about, having also made for the harbour to obtain some shelter from the storm. The Lestris chased the smaller species with effect, but never approached the Great Black-backed Gulls, nor even their young, which were also flying with the rest. The Kitiwakes and the Ring-billed Gulls were the species which we saw them attack, although they did not procure much food from them, the weather being such that they could not fish. They were therefore contented, as was the Lestris, with the fishes that had been thrown on shore. At times the Jagers would ramble over the land, flying close upon the rocks, and proceeding at a rapid rate even against the wind. They remained in our neighbourhood until the tempest

abated, when they went off to sea, and I saw no more of them until we reached St. George's Bay in Newfoundland.

There, on a squally afternoon, two or three of them were observed flying around, but keeping at such a distance that we could not shoot any of them. The following day, after setting sail, we encountered a heavy gale, which, although foretold by me from the appearance of the birds in the harbour, our good captain would not believe as likely to happen. We were obliged to lie-to, and were tossed about for three nights and days, but escaped with little other damage than the loss of a pet Gull, which was washed overboard.

On our return to Eastport, Captain EMERY told me that he had seen a great number of these Jagers near Cape Sable; and at Halifax, in Nova Scotia, I was assured that they breed on Sable Island, which is sixty or seventy miles distant from the coast. I never observed one of these birds along the shores of the United States, although some of the genus go as far south in winter as the Gulf of Mexico.

Nothing is known with certainty respecting the changes which this species undergoes as it advances toward maturity. Captain JAMES CLARK ROSS, R. N., has informed me that a nest containing two eggs was found by him near Fury Point, close by the edge of a small lake. I have no doubt that this bird breeds in Labrador, as the female which I obtained in July appeared as if it had young at the time.

My friend Mr. SELBY states that he is not aware that an adult bird has yet been killed in Britain. M. TEMMINCK says it forms a rude nest of grass and moss, which is placed on a tuft in the marshes, or on a rock, and lays two or three very pointed eggs, of a greyish-olive colour, marked with a few blackish spots. Dr. RICHARDSON has the following notice respecting it in the *Fauna Boreali-Americana*:—"The Pomarine Jager or Gull-hunter is not uncommon in the Arctic seas and northern outlets of Hudson's Bay, where it subsists on putrid fish and other animal substances thrown up by the sea, and also on the matters which the Gulls disgorge when pursued by it. It retires from the north in the winter, and makes its first appearance at Hudson's Bay in May, coming in from seaward."

LESTRIS POMARINA, Bonap. Syn., p. 364.

LESTRIS POMARINA, *Pomarine Jager*, Swains. and Rich. F. Bor. Amer., vol. ii. p. 429.

POMARINE JAGER, Nutt. Man., vol. iii. p. 315.

POMARINE JAGER, *Lestris pomarinus*, Aud. Orn. Biog., vol. iii. p. 396; vol. v. p. 643.

Female, 20 $\frac{1}{4}$, 48.

From Massachusetts northward. Seen in Labrador. Breeds in high northern latitudes.

Adult Female.

Bill shorter than the head, strong, slightly compressed, straight, the tip curved. Upper mandible with the dorsal line nearly straight, toward the tip curved, the ridge broad and convex with a slight central depression, the sides convex, the edges sharp and inflected, the tip compressed, rather rounded but sharp. Nasal groove long, narrow, curved; nostrils in its fore part, medial, lateral, longitudinal, broad before, extremely narrow behind, open and pervious. Lower mandible with the angle long and narrow, a slight prominence at its extremity, beyond which the dorsal line is slightly concave, the sides erect, and slightly convex, the edges sharp and inflected, the tip obliquely truncate.

Head rather large. Neck of moderate length. Body rather full. Feet of moderate length, rather slender; tibia bare at its lower part, and rough all round with small convex scales; tarsus compressed behind, anteriorly covered with decurved scutella, the sides reticulated, the hind part rough with small pointed scales; hind toe extremely small and elevated, the fore toes of moderate size, connected by reticulated webs, which have their margins convex; the third toe longest, the fourth nearly as long, all scutellate above. Claws strong, curved, very acute; compressed, that of third toe with a sharp inner edge.

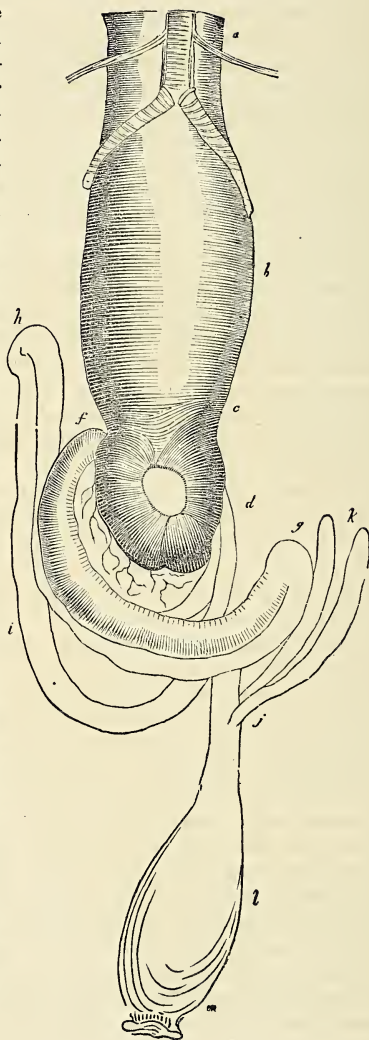
The plumage in general is close, elastic, soft and blended; the feathers on the back and wings rather compact and distinct. Wings very long, rather broad, pointed; primary quills tapering and rounded, the first longest, the rest rapidly graduated; secondary rather short, rounded. Tail of moderate length, the feathers, which are twelve, are broad and rounded, the two middle an inch longer than the next.

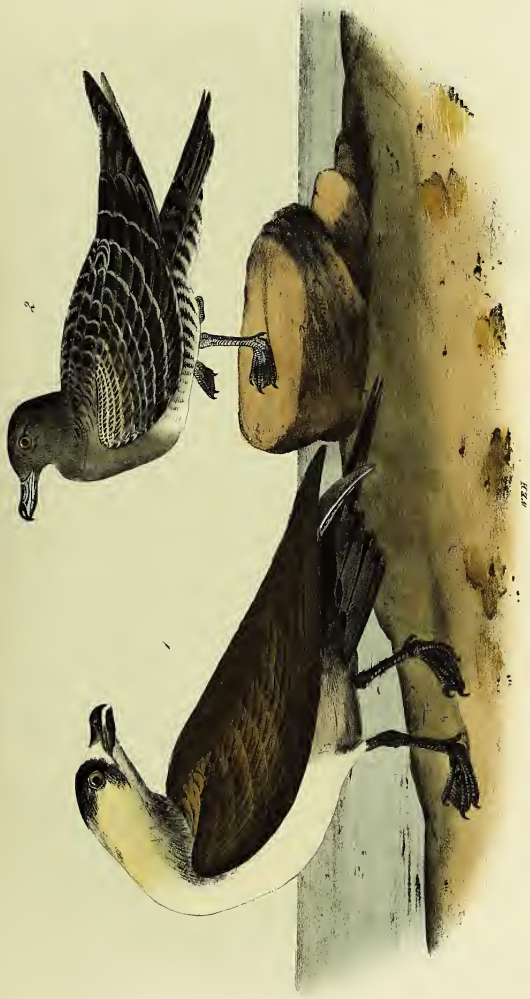
Bill blackish-brown at the end, dingy-yellow towards the base. Iris brown. Tibia, toes, webs, and lower half of tarsus black, the upper half light blue; claws black. Upper part and sides of the head anteriorly brownish-black; upper part of neck all round yellowish-white; the rest of the neck white, barred with brownish-black, each feather having two transverse bands of that colour; breast white; sides, abdomen and lower tail-coverts white, barred with brownish-black, as are the upper tail-coverts. Back and wings brownish-black; primary quills of the same colour, white on the inner webs towards the base, as are the secondaries and tail-feathers, lower surface of wings mottled and barred with white and dusky.

Length to end of tail $20\frac{1}{4}$ inches, to end of wings $20\frac{1}{4}$, to end of claws $19\frac{1}{4}$; extent of wings 48; wing from flexure 14; tail $6\frac{2}{3}$; bill along the back $1\frac{3}{4}$, along the edge of lower mandible $2\frac{1}{2}$; tarsus $2\frac{1}{2}$; middle toe $1\frac{3}{4}$, its claw $\frac{3}{4}$. Weight $1\frac{1}{2}$ lbs.

Female, from Dr. T. M. BREWER. The mouth rather wide, 1 inch 2 twelfths across; the palate flat, with two longitudinal papillate ridges, the

space between which and the palatal slit is also covered with papillæ; anteriorly, on the mandible, are three ridges; posterior aperture of the nares oblongo-linear, with its margins papillate; the lower mandible dilatable, as in the Gulls. Tongue 1 inch long, emarginate and papillate at the base, broadly channelled above, contracted and induplicate toward the end, horny beneath, and thin-edged, with the point slit to the depth of $1\frac{1}{2}$ twelfths. Lobes of the liver very unequal, the right $2\frac{1}{4}$ inches long, the left 1 inch 10 twelfths; gall-bladder oblong, $7\frac{1}{2}$ twelfths long, 3 twelfths broad. The stomach, *c d*, is small, 1 inch 2 twelfths long, 1 inch in breadth; its lateral muscles thin; the epithelium thin, longitudinally rugous, of a reddish colour. The proventricular glands extremely small, roundish, forming a belt 7 twelfths in width. Intestine, *f g h l m*, $24\frac{1}{2}$ inches long, 6 twelfths wide at the top, but contracting to 4 twelfths; it forms 7 curves; the cœca, *j k*, 1 inch 10 twelfths in breadth. Trachea 5 inches long, from $3\frac{1}{2}$ twelfths to $2\frac{1}{2}$ twelfths long, for 8 twelfths their width is 1 twelfth, afterwards $2\frac{1}{2}$ twelfths, diminishing to $1\frac{1}{3}$ twelfths, the extremity blunt; rectum 2 inches 3 twelfths long, for 1 inch 4





Richardson Lager.

Drawn from Nature by J. Audubon F.R.S.

1 Male Adult. 2, Young in Sept.

Lith. Printed & Col'd by J. T. Bowen, Philad.

twelfths in width, then enlarging into an oblong cloaca 10 twelfths in breadth; considerably flattened; the rings 98, unossified, of the same structure as in the Gulls. Bronchi rather wide, of 20 half rings. Muscles as in the Gulls.

The digestive organs of this bird differ from those of the Gulls only in having the cœca much more elongated; the cloaca oblong, instead of being globular, and the stomach less muscular. The tongue differs greatly from that of either the Gulls or Terns.

RICHARDSON'S JAGER.

LESTRIS RICHARDSONII, *Swains.*

PLATE CCCCLII.—MALE AND YOUNG.

This bird, though rare on the coast of the United States, visits the shores of Massachusetts and Maine, where, during winter, it is seen over the bays and inlets, to which various species of Gulls also resort at the same season. It is more shy and difficult to be approached than the Pomarine Jager. Its flight is rapid and greatly protracted; and, like the other species of this genus, it harasses the smaller Gulls and Terns, forcing them to disgorge their food. Dr. RICHARDSON informs us that it breeds in considerable numbers in the barren grounds, at a distance from the coast, and that it feeds on testaceous mollusca, which are plentiful in the small lakes of the fur countries. I am unable to afford any information respecting its habits; nor can I state decidedly the number of eggs which it lays, although I have procured several of them. They measure two inches and three-eighths in length, by one inch and five-eighths in breadth, are of an oval rather pointed form, and have a dull greyish-yellow ground, patched with umber and faint purple, the markings closer towards the larger end.

LESTRIS RICHARDSONII, *Richardson's Jager*, Swains. and Rich. F. Bor. Amer., vol. ii. p. 433.

RICHARDSON'S JAGER, Nutt. Man., vol. ii. p. 319.

RICHARDSON'S JAGER, *Lestris Richardsonii*, Aud. Orn. Biog., vol. iii. p. 503.

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Male, $18\frac{1}{2}$, 40. Young, in September, $15\frac{1}{2}$; wing, $11\frac{1}{2}$.

Coast of Massachusetts and Maine, during winter. Breeds in the northern barren grounds, away from the coast.

Adult Male in spring.

Bill about the length of the head, rather slender, straight, the tip curved. Upper mandible with the dorsal line straight, toward the end curved, the ridge broad and convex, the sides separated from the ridge by a narrow groove, extremely narrow and convex, the edges sharp and inflected, the tip compressed, rather obtuse. Nostrils in the fore part of the nasal groove, nearer the tip than the base, sub-marginal, pervious, linear-oblong, wider anteriorly. Lower mandible with the angle long and narrow, a slight prominence at its extremity, beyond which the dorsal line is straight and ascending, the sides sloping outwards and convex, the edges sharp and inflected, the tip obliquely truncate and rather obtuse.

Head rather small, oblong, much narrowed before. Neck of moderate length. Body rather slender. Feet rather short, and of moderate strength; tibia bare at its lower part; tarsus anteriorly covered with broad decurved scutella, on the sides with oblong scales, behind with smaller oblong prominent scales; hind toe extremely small and elevated, the fore toes of moderate size, connected by reticulated webs, which have their margins convex; the third toe longest, the fourth a little shorter, the second considerably shorter; all covered above with numerous scutella, the lateral ones margined externally with small prominent scales directed forwards. Claws of moderate size, curved, acute, compressed, that of third toe with a sharp inner edge.

The plumage in general is close, elastic, soft, and blended; the feathers on the back and wings rather compact and distinct. Wings very long, rather broad, pointed; primary quills tapering and rounded, the first longest, the rest rapidly graduated; secondary rather short, obliquely rounded. Tail feathers of moderate length, excepting the two middle, which extend beyond the rest and taper to a point, the other feathers broad and rounded, there being twelve in all.

Bill greyish-black, the upper part bluish. Iris brown. Legs and feet black. The general colour of the plumage is of a sooty-brown, the upper part of the head, the primary quills, and the tail darker, the breast and abdomen lighter; the shafts of the primary quills white, of the tail feathers brownish.

Length to end of tail $18\frac{1}{2}$ inches, to end of wings 17; extent of wings 40; wing from flexure $12\frac{3}{4}$; tail $8\frac{1}{2}$, the middle feathers $2\frac{3}{4}$ longer than the rest; bill along the back $1\frac{4}{8}$, along the edge of lower mandible $1\frac{3}{4}$; tarsus $1\frac{3}{8}$; middle toe $1\frac{5}{8}$, its claw $\frac{1}{2}$.



W.C.H.

Arctic Skua

Young Bird in September.

Bill light blue, dusky at the end. Iris brown. Tarsi and basal portion of the toes and webs light blue, the rest black. The general colour of the plumage is sooty-brown, lighter on the neck and lower parts; the feathers of the back are all tipped with whitish, and the breast, sides, lower wing-coverts, abdomen, and lower tail-coverts, are undulatingly barred with pale greyish-yellow.

Length to end of tail $15\frac{1}{2}$ inches, to end of wings $13\frac{1}{2}$, to end of claws $13\frac{1}{4}$; wing from flexure $11\frac{1}{2}$; tail $6\frac{1}{4}$, the middle feathers only $\frac{3}{4}$ longer than the rest; bill along the back $1\frac{1}{4}$; tarsus $1\frac{3}{4}$; middle toe and claw $1\frac{1}{2}$. Weight 7 oz.

THE ARCTIC JAGER.

LESTRIS PARASITICUS, Linn.

PLATE CCCCLIII.—MALE AND FEMALE.

During winter this indefatigable teaser of the smaller Gulls often ranges along our southern coasts as far as the Mexican Gulf, where I have seen it, as well as opposite the shores of the Floridas; but I never met with a single individual in summer, even in the most northern parts, although I had expected to find it breeding on the coasts of Labrador and Newfoundland. Few birds surpass it in power or length of flight. It generally passes through the air at a height of fifty or sixty yards, flying in an easy manner, ranging over the broad bays, on which Gulls of various kinds are engaged in procuring their food. No sooner has it observed that one of them has secured a fish, than it immediately flies towards it and gives chase. It is almost impossible for the Gull to escape, for the warrior, with repeated jerkings of his firm pinions, sweeps towards it with the rapidity of a Peregrine Falcon pouncing on a Duck. Each cut and turn of the Gull only irritates him the more and whets his keen appetite, until by two or three sudden dashes, he forces it to disgorge the food it had so lately swallowed. This done, the poor Gull may go in search of more; the Lestrus is now for awhile contented, and alights on the water to feed at leisure. But soon,

perceiving a distant flock of Gulls, he rises on wing and speeds towards them. Renewing his attacks, he now obtains an abundant supply, and at length, when quite gorged, searches for a place on which to alight, unseen by any other of his tribe more powerful than himself. When on wing, its beautiful long tail-feathers seem at times to afford this bird great assistance in executing short sudden turns, which have often brought to my mind the motions of a greyhound while pursuing a hare. By sudden lashings of its tail, it can instantly turn, or arrest its flight. When it is on the water, it keeps that part upright, but when on a rock or a floating piece of timber, it allows it to fall in a graceful manner.

Although usually seen single, or at most in pairs, during the winter, I observed this species in April, on my voyage to the Florida Keys, in flocks of from ten to fifteen, congregated as if for the purpose of returning to the northern regions, where it is said to breed in groups. Mr. SELBY, in treating of this bird, says "It breeds upon several of the Orkney and Shetland Isles, and is gregarious during that period; and the situations selected for nidification are the unfrequented heaths at some distance from the shores. The nest is composed of dry grass and mosses, and its two eggs are of a dark oil green, with irregular blotches of liver-brown. At this season the bird is very courageous, and, like the Common Skua, attacks every intruder upon the limits of its territory, by pouncing and striking at the head with its bill and wings. It also occasionally endeavours to divert attention by feigning accidental lameness." Having received eggs of this bird from individuals who had collected them, I may add that they are broadly rounded at the larger end, rather pointed at the smaller, have a smooth shell, and average two inches four-twelfths in length, by one inch and four and a half eighths in breadth.

M. TEMMINCK, in his *Manuel d'Ornithologie*, describes the young when about to leave the nest as follows: "Top of the head of a deep grey; sides and upper part of the neck of a light grey, sprinkled with longitudinal brown spots; a black spot before the eyes; lower part of the neck, back, scapulars, small and large wing-coverts, umber-brown, each feather bordered with yellowish-brown, and often with reddish; lower parts irregularly variegated with deep brown and yellowish-brown on a whitish ground; tail-coverts and abdomen transversely barred; quills of the wings and tail blackish, white at their base and on the inner barbs, all terminated with white; the two outer shafts white; tail only rounded; base of the bill yellowish-green, black towards the point; tarsi bluish-grey; base of the toes and membranes white, the rest black, hind claw often white."

In middle age, he says, "all the upper parts are greyish-brown without spots; lower parts of a somewhat lighter tint, and also unspotted; inner base

of the quills and only the upper parts of the tail-feathers pure white, the rest blackish-brown; the two elongated tail-feathers gradually diminish in breadth towards the extremity, which ends in a very attenuated point; bill and feet as in the old individuals."

Captain JAMES CLARK ROSS has informed me by letter, that this species was seen in great numbers during his late voyage towards the Arctic circle; that the Pomarine Lestris was less abundant, and RICHARDSON'S very rare.

LESTRIS BUFFONII, Bonap. Syn., p. 364.

LESTRIS PARASITICA, *Arctic Jager*, Swains. and Rich. F. Bor. Amer., vol. ii. p. 430.

ARCTIC JAGER, Nutt. Man., vol. ii. p. 317.

ARCTIC JAGER, *Lestris parasiticus*, Aud. Orn. Biog., vol. iii. p. 470.

Male, 23, 45.

Ranges during winter, along and off the coast, though always in sight of land, as far as the Gulf of Mexico. Breeds in high latitudes.

Adult Male.

Bill about the length of the head, rather slender, straight, the tip curved. Upper mandible with the dorsal line straight, toward the end curved, the ridge broad and convex, the sides separated from the ridge by a narrow groove, extremely narrow and convex, the edges sharp and inflected, the tip compressed, rather obtuse. Nostrils in the fore part of the nasal groove, nearer the tip than the base, sub-marginal, pervious, linear, oblong, wider anteriorly. Lower mandible with the angle long and narrow, a slight prominence at its extremity, beyond which the dorsal line is straight and ascending, the sides sloping outwards and convex, the edges sharp and inflected, the tip obliquely truncate and rather obtuse.

Head rather small, oblong, much narrowed before. Neck of moderate length. Body rather slender. Feet rather short and of moderate strength; tibia bare at its lower part; tarsus anteriorly covered with broad decurved scutella, on the sides with oblong scales, behind with smaller oblong prominent scales; hind toe extremely small and elevated, the fore toes of moderate size, connected by reticulated webs, which have their margins convex; the third toe longest, the fourth not much shorter, all covered above with numerous scutella, the lateral ones margined externally with small prominent scales directed forwards. Claws of moderate size, curved, acute, compressed, that of third toe with a sharp inner edge.

The plumage in general is close, elastic, soft, and blended; the feathers on the back and wings rather compact and distinct. Wings very long, rather broad, pointed; primary quills tapering and rounded, the first longest, the rest rapidly graduated; secondary rather short, rounded. Tail feathers of

moderate length, excepting the two middle, which are extremely elongated and gradually attenuated, the rest broad and rounded, there being twelve in all.

Bill greyish-black, the upper part bluish. Iris brown. Feet black, but with the greater part of the tarsus yellow. The neck and lower parts are white, the former tinged with yellow; upper and fore part of head with the space before the cheeks blackish-brown; the lower part of the hind neck and all the upper parts blackish-grey, the primary quills and tail-feathers brownish-black, the shafts of the former white.

Length to end of tail 23 inches, to end of wings 15; extent of wings 45; wing from flexure 12; tail 12; bill along the back $1\frac{1}{4}$, along the edge of lower mandible $1\frac{3}{4}$; tarsus $1\frac{7}{8}$; middle toe $1\frac{1}{2}$; its claw $\frac{1}{2}$.

Adult Female.

The female resembles the male, but the middle tail-feathers are about three inches shorter.

GENUS II.—DIOMEDEA, *Linn.* ALBATROSS.

Bill rather longer than the head, nearly straight, stout, much compressed; upper mandible with its dorsal line much declinate, and nearly straight for a third of its length, then concave, ascending to the unguis, on which it is arched and decurved in the third of a circle, the ridge broad, convex, rounded at the base, separated in its whole length by a groove, margined below beyond the nostrils by a prominent line, from the sides, which are erect and slightly convex, the edges sharp, the unguis decurved, much compressed, with its sides flattened, and the tip acute; nostrils sub-basal, prominent, tabular, having a horny sheath; lower mandible with the angle very narrow, reaching to the tip, and having at its extremity a long slender interposed horny process; the outline of the crura gently ascending, and quite straight, until near the end, when it is a little decurved, the sides ascending, nearly erect, a little convex, the edges sharp, the tip extremely compressed, its

upper edges decurved. Head rather large, ovate; neck of moderate length; body full. Feet rather short, stoutish; tibia bare, below scaly; tarsus roundish, reticulated; toes three, long, slender, outer very little shorter than middle, scaly for half their length, then scutellate. Claws rather small, slender, slightly arched, somewhat obtuse. Plumage full, soft, blended, but rather fine, somewhat compact above. Wings very long, and very narrow, the humerus and cubitus extremely elongated; first quill longest. Tail of twelve broadly rounded feathers, short, rounded.

YELLOW-NOSED ALBATROSS.

DIOMEDEA CHLORORHYNCHOS, Gmel.

(NOT FIGURED.)

A skin of this bird was sent to me by Mr. TOWNSEND, who procured it in the Pacific Ocean, not far from the mouth of the Columbia river. The species is well known, and one which, unlike most of the others, has been tolerably well described.

DIOMEDEA CHLORORHYNCHOS, Aud. Orn. Biog., vol. v. p. 326.

Length, 37; wing, 21; bill, $5\frac{1}{4}$; tail, 8 $\frac{1}{2}$.

Pacific Ocean, not far from Columbia river.

Bill longer than the head, nearly straight, stout, much compressed. Upper mandible with its dorsal outline much declinate and nearly straight for a third of its length, then concave, ascending to the unguis, on which it is arched and decurved in the third of a circle, the ridge broad, convex, rounded at the base, separated in its whole length by a groove, margined below beyond the nostrils by a prominent line, from the sides, which are erect and convex, the edges sharp, the unguis decurved, much compressed, with its sides flattened, and the tip acute. Nostrils sub-basal, prominent, tubular, having a horny sheath. Lower mandible with the angle very narrow, reaching to the tip, and having at its extremity a long slender interposed horny process; the outline of the crura gently ascending and quite

straight until near the end, when it is a little decurved, the sides ascending, nearly erect, a little convex, the edges sharp, the tip extremely compressed, its upper edges decurved.

Head rather large, ovate, compressed anteriorly; neck of moderate length; body full. Feet rather short, stoutish; tibia bare for three quarters of an inch, covered all round with small angular scales; tarsus roundish, reticulated with small angular and roundish scales; toes three, long, slender, the outer very little shorter than the middle, which exceeds the inner by three quarters of an inch; they are covered above with small angular scales for half their length, in the rest of their extent with scutella, and connected by emarginate webs, the outer and inner with an external lobed membrane. Claws rather small, slender, slightly arched, rather depressed, convex above, somewhat obtuse.

Plumage full, soft and blended. Wings very long and very narrow, the humerus and cubitus being extremely elongated; the first primary longest, the rest very rapidly diminishing; the secondaries extremely short. Tail of twelve broadly rounded feathers, short, rounded, the lateral feathers one inch shorter than the middle.

Bill black, with the ridge in its entire length and breadth, the tip of the upper mandible, and the crura of the lower along their inferior edge, yellow. Feet yellow, claws yellowish-grey. The head and neck are ash-grey, the fore part of the back shaded into blackish-grey; the wings entirely brownish-black, the shafts of the primaries white, toward the end brownish-black; the hind part of the back, rump, and upper tail-coverts, white; the tail deep grey, the bases and shafts of the feathers white. The loreal space is of a darker grey than the rest of the head, and that colour deepens at the fore part of the eye, forming a spot which includes the whole of the upper eyelid, and the anterior half of the lower, of which the other half is white; the lower half of the neck anteriorly, the breast, sides, abdomen, lower tail-coverts, some of the axillaries, and the larger lower wing-coverts white; the rest being brownish-black.

Length to end of tail 37 inches; bill along the ridge $5\frac{3}{12}$, along the edge of lower mandible $4\frac{1}{12}$, its height at the base $1\frac{9}{12}$, at the middle 1, at the angle $1\frac{3}{12}$; wing from flexure 21; tail $8\frac{1}{4}$; bare part of tibia $\frac{3}{4}$; tarsus $3\frac{2}{12}$; inner toe $3\frac{7}{12}$, its claw $\frac{7}{12}$; middle toe $4\frac{5}{12}$, its claw $\frac{9}{12}$; outer toe $4\frac{5}{12}$, its claw $\frac{5}{12}$.

BLACK-FOOTED ALBATROSS

DIOMEDEA NIGRIPES, *Aud.*

(NOT FIGURED.)

For a specimen of this Albatross, I am indebted to Mr. TOWNSEND, who procured it on the 25th December, 1834, on the Pacific Ocean, in lat. 30°, 44' N., long. 146°. It is clearly distinct from the other two described in this work, namely the Dusky and the Yellow-nosed; but I have received no information respecting its habits. Not finding any of the meagre notices or descriptions to which I can refer to agree with this bird, I have taken the liberty of giving it a name, being well assured that, should it prove to have been described, some person will kindly correct my mistake.

BLACK-FOOTED ALBATROSS, *Diomedea nigripes*, Aud. Orn. Biog., vol. v. p. 327.

Length, 36; wings 21; bill, 5; tail, 5.

Pacific Ocean, off California.

Male.

Bill longer than the head, nearly straight, stout, compressed. Upper mandible with its dorsal outline straight and declinate until near the middle, when it becomes a little concave, and along the unguis curves in the third of a circle, the ridge convex, very broad and convex at the base, with its basal margin curved in the third of a circle, the ridge separated in its whole length by a groove, margined below by a prominent line, from the sides, which are prominently convex, the edges sharp, the unguis decurved, strong, acute, with the sides a little convex. Nostrils sub-basal, prominent, tubular, having a horny sheath. Lower mandible with the angle narrow, reaching to the tip, and having at its extremity a slender horny-interposed process; the outline of the crura gently ascending, slightly convex, toward the end a little concave, at the tip deflected, the sides ascending and considerably convex, but at the base concave, the edges sharp and inflexed, the tip compressed, its upper edges decurved.

Head rather large, ovate, anteriorly compressed; neck of moderate length; body full. Feet rather short, stoutish; tibia bare for an inch and tenths, reticulated all round with very small convex scales; tarsus rather slender, covered all round with small roundish convex scales; toes three,

long, slender, for half their length covered above with transverse series of flat scales, in the rest of their extent scutellate; the second ten-twelfths of an inch shorter than the middle, which is scarcely longer than the outer. Claws rather small, slender, slightly arched, rather compressed, somewhat obtuse.

Plumage full, soft and blended. Wings very long and very narrow, the humerus and cubitus being extremely elongated; the first primary longest, the rest rapidly diminishing; secondaries extremely short. Tail of twelve rounded feathers, extremely short, rounded, the lateral feathers one inch shorter than the middle.

Bill dusky, the greater part of the lower mandible, and the middle of the upper, tinged with yellowish-brown. Feet and claws black. The fore part of the head, cheeks and throat light dusky-grey, the capistral feathers nearly white, as is a small patch at the posterior angle of the eye; the upper part of the head, the hind neck, and all the upper parts, including the wings and tail, are of a sooty-brown tinged with grey, as are the lower surface of the wings and the axillaries. The lower parts are of a dull grey tint, deeper on the fore parts and sides of the neck.

Length to end of tail 36 inches; bill along the ridge 5, along the edge of lower mandible 5; wing from flexure 21; tail 3; bare part of tibia $1\frac{1}{2}$; tarsus $3\frac{1}{2}$; inner toe $1\frac{1}{2}$, its claw $\frac{6}{12}$; middle toe $4\frac{5}{12}$, its claw $\frac{5}{12}$; outer toe $4\frac{7}{12}$, its claw $\frac{6}{12}$.

The three Albatrosses described in this volume may very easily be distinguished by the form of the bill, independently of all other characters. Thus:

Diomedea nigripes has the bill much thicker, or less compressed than the other two species; its ridge very broad and convex at the base, its basal outline being semicircular and two inches in extent, so that its sides behind overlap and obliterate the sutural space behind the nostrils.

Diomedea chlororhyncos has the bill much compressed, its ridge convex in its whole length, but with its basal outline, although semicircular, only half an inch in extent, so that between its margins and those of the sides of the bill there is behind the eye a space nearly a quarter of an inch in breadth.

Diomedea fusca has the bill as much compressed as that of *D. chlororhyncos*; but its ridge, in place of being convex, is carinate, and instead of having its base semicircular, as in the other two species, has it running up on the forehead into a very acute angle.

Many other differences might be pointed out, but these will suffice to distinguish the species. It may be remarked, that such descriptions are absolutely necessary to render the species of this genus intelligible; for at present it seems impossible to form any correct idea from the notices given in books; and if descriptions are not sufficient to enable one to refer an object to its species, of what use can they be?



Dusky Scoter.

Drawn from Nature by J. J. Audubon, F.R.S.E.S.

Lith. Printed & Col. by J. T. Bowen, Philad.

DUSKY ALBATROSS.

DIOMEDEA FUSCA, Aud.

PLATE CCCCLIV.—ADULT.

The skin from which I made my drawing of this species was prepared by Mr. TOWNSEND, who procured the bird near the mouth of the Columbia river. Of its habits or distribution I am entirely ignorant. Having failed in finding any figure or description of an Albatross agreeing entirely with it, I have been induced to consider it as new.

DUSKY ALBATROSS, *Diomedea fusca*, Aud. Orn. Biog., vol. v. p. 116.

Adult—length, 34 ; wing, 21 ; tail, 11 ; bill, $4\frac{1}{2}$.

Off the Columbia river.

Adult.

Bill longer than the head, nearly straight, stout, much compressed. Upper mandible with its dorsal outline straight and declinate until about one-third of its length, when it becomes a little concave, and along the unguis curves in the third of a circle, the ridge narrow, pointed at the base, separated in its whole length by a groove margined below by a prominent line from the sides, which are erect and convex, the edges sharp, the unguis decurved, strong, and sharp. Nostrils sub-basal, prominent, tubular, having a horny sheath, and placed rather nearer the ridge than the margin. Lower mandible with the angle narrow, reaching to the tip, and having at its extremity a slender interposed process ; the outline of the crura gently ascending, and nearly straight, towards the end a little deflected, the sides ascending and a little convex, *with a groove in their whole length as far as the unguis*, filled by a membrane, which is wider at the base, the edges sharp, the tip compressed, its upper edges decurved.

Head rather large ; neck of moderate length, body full. Feet rather short, stoutish ; tibia bare for an inch, covered all round with small angular scales ; toes three, long, slender, the two outer a little shorter than the middle, the inner considerably shorter ; they are covered above with small angular scales at the base, in the rest of their extent with scutella, and connected by emarginate webs, the outer and inner with an external membrane. Claws

rather small, slender, slightly arched, rather depressed, convex above, somewhat obtuse.

Plumage full, soft, and blended. Wings very long and very narrow, the humerus and cubitus being extremely elongated; the first primary longest, the rest very rapidly diminishing; secondaries extremely short. Tail of moderate length, cuneate, of twelve strong feathers, of which the outer are rounded, the inner gradually more acute, the middle feather exceeding the lateral by two inches and three-fourths.

Bill black; feet yellow, claws greyish-white. The head and upper part of the neck are greyish-black, tinged with brown; the rest of the neck, all the lower parts, the back and rump are light brownish-grey; the scapulars darker, the wings coloured like the head; the primary quills and tail-feathers greyish-black, with white shafts. The eyelids are narrowly margined with white feathers, their anterior part excepted.

Length to end of tail $3\frac{1}{2}$ inches; bill along the ridge $4\frac{1}{2}$, along the edge of lower mandible $3\frac{5}{8}$; wing from flexure 21; tail 11; bare part of tibia 1; tarsus $3\frac{1}{2}$; inner toe $3\frac{7}{8}$, its claw $\frac{1}{2}$; middle toe $4\frac{1}{2}$, its claw $\frac{9}{12}$; outer toe $4\frac{3}{4}$, its claw $\frac{7}{12}$.

GENUS III.—PROCELLARIA, *Linn.* FULMAR.

Bill of about the length of the head, or somewhat shorter, robust, straight, moderately compressed, with the tip decurved; upper mandible with the nostrils dorsal, separated by a thin septum, covered by an elevated horny case, and opening directly forwards, the ridge nearly straight or concave in its outline, laterally sloping or convex, separated by a groove from the sides, which are erect and convex, the edges sharp, inflected, and in their outline slightly recurved from the base to the unguis, which is strong, decurved, and acute; lower mandible with the angle long, narrow, acute, the sides erect, with a groove in their whole length, the edges sharp and direct, the very short dorsal line ascending and slightly concave, the edges decurved at the end. Head rather large, ovate; neck rather short; body full. Feet of moderate length, stout; tibia bare for a short space below; tarsus a little

compressed, reticulated with angular scales ; hind toe a slight prominence with a conical claw ; fore toes long, slender, scutellate, connected by striated even webs ; fourth toe slightly shorter than third. Claws moderate, arched, compressed, rather acute. Plumage full, close, elastic, rather compact above. Wings very long, narrow, the first quill longest. Tail short, or of moderate length, of from twelve to sixteen feathers.

GIGANTIC FULMAR.

PROCELLARIA GIGANTEA, *Linn.*

(NOT FIGURED.)

A specimen of the Gigantic Fulmar, shot at some distance from the mouth of the Columbia river, has been sent to me by Mr. TOWNSEND, along with those of other species of the same genus described in this volume, and which it resembles in form and proportions. The great size of this bird gives it at first sight the appearance of an Albatross. It is described as frequent in the southern seas, gliding silently over the surface of the waters, and subsisting on carcasses of cetacea, seals, birds, and other animal matter ; the sailors distinguishing them by the name of "Mother Carey's Geese."

GIGANTIC FULMAR, *Procellaria gigantea*, Aud. Orn. Biog., vol. v. p. 330.

Length, 36 ; tail, $7\frac{1}{2}$; bill, 4.

Off the Columbia river.

Bill longer than the head, robust, straight, moderately compressed, with the tip decurved. Upper mandible with the nostrils on the ridge, separated only by a thin septum covered by a broad elongated horny case, of which the ridge is nearly straight and carinate, and the base striated ; the sides erect and convex, separated by a groove from the nasal plate, as well as from the unguis, which is remarkably strong, curved, laterally convex, and acute, the edges blunt, direct, slightly recurved, along the unguis sharp and decurved. Lower mandible with the angle long and narrow, the sides sloping a little outwards and nearly flat, with a longitudinal seam near the edges,

which are inclinate and sharp, the tip compressed, the dorsal outline ascending and extremely sharp, the edges at the end suddenly decurved.

Head rather large, ovate; neck rather long; body full. Legs short, rather stout; tibia bare for an inch and a quarter; tarsus a little compressed, covered with angular scales, of which the posterior are much smaller. Hind toe elevated, its first phalanx scarcely apparent, its claw large, somewhat conical, obtuse, flattened beneath; the fore toes long, slender, scutellate above, connected by striated entire webs; the fourth toe slightly shorter than the third, including the claws, but otherwise longer; the second toe not much shorter. Claws moderate, arched, compressed, rather acute, that of the third toe with an inner thin edge.

Plumage full, close, elastic; on the back and wings the feathers rather distinct. Wings very long, narrow; primary quills broad, tapering to an obtuse point, the first longest, the rest rapidly graduated; secondary quills broad and rounded. Tail short, much rounded, of sixteen broad, rounded feathers, of which the lateral are an inch and a half shorter than the middle.

Bill and feet yellow. The general colour of the plumage is a deep dingy grey or blackish-grey, of tint similar to that of the young of *Procellaria glacialis* and *P. pacifica*, but much deeper. It is considerably lighter on the lower parts, and especially on the lower surface of the wings.

Length to end of tail 36 inches; bill along the ridge 4, along the edge of lower mandible $3\frac{1}{2}$; length of nasal case $1\frac{9}{12}$; wing from flexure $1\frac{9\frac{1}{2}}{12}$; tail $7\frac{1}{2}$; tarsus $3\frac{1}{4}$; first toe $\frac{1}{12}$; its claw $\frac{5}{12}$; second toe $3\frac{1}{2}$, its claw $\frac{7}{12}$; third toe $4\frac{5}{12}$, its claw $\frac{11}{12}$; fourth toe $4\frac{1}{4}$, its claw $\frac{1}{12}$.



Fulmar Petrel.

Adult Male Summer Plumage.

Drawn from Nature by J. Audubon FRSLS

Engraved by J. Bowen Platel.

THE COMMON FULMAR.

PROCELLARIA GRACIALIS, *Linn.*

PLATE CCCCLV.—MALE.

Though not a large bird, the Fulmar is possessed of considerable strength, and has a powerful and sustained flight. In autumn and winter it is seen on our eastern coasts, from which it retires early in summer, to betake itself to the northern retreats in which it rears its young. I have never seen it farther south than Long Island, but I have often found it on the banks of Newfoundland, and in the space intervening between them and our shores. From the beginning of September to that of May it may be said to be pretty common, especially around the banks, to which the eod-fishers resort, and where it feeds chiefly on the rejected garbage.

One calm day in August, when on a voyage from England to New York, I procured several Fulmars. They came up and alighted near the boat, whenever we threw any thing overboard, and did not seem to be in the least alarmed by the report of a gun. In one instance I shot one on the water, when it was so near that I could distinctly see the colour of its eye. A great number of them were swimming in small detached flocks of eight or ten, their colour at a distance appearing as if pure white, and contrasting beautifully with the dark blue of the sea. They floated very buoyantly, some swimming about with great ease, others to appearance sound asleep. Most of them had the wing and tail-feathers ragged, and some were much soiled with greasy matter, which gave them an unpleasant appearance. Those which were caught, on being wounded, emitted quantities of oily matter by their nostrils, and disgorged much of the same substance; but did not attempt to bite, which seemed strange in birds having the bill so powerful and hooked. They fly with less grace than the Shearwaters, proceeding in a direct line, and at a small height, towards the objects on which they feed.

I was much disappointed at not finding the Fulmar along the rocky shores of Labrador, where I had expected to meet with it, as it is regularly observed in spring moving northward in files opposite the entrance of the Straits of Belle Isle. Its passage towards the Arctic Regions has been observed by Captain SABINE on the coast of Greenland. "Whilst the ships,"

he says, "were detained by the ice in Jacob's Bay, in latitude 71°, from the 24th of June to the 3d of July. Fulmars were passing in a continual stream to the northward, in numbers inferior only to the flight of the Passenger Pigeon in America." While on my way to Labrador, I was told that they bred on the Seal Islands off the entrance of the Bay of Fundy. The egg, which is of a regular ovate form, with a smooth brittle pure white shell, measures two inches and seven-eighths in length, by two inches in breadth.

My much esteemed friend Mr. SELBY, in his *Illustrations of British Ornithology*, gives the following account of this species. "The steep and rocky St. Kilda, one of the western islands of Scotland, is the only locality within the British dominions annually resorted to by the Fulmar, the rest of the Scottish and our more southern coasts being rarely visited even by stragglers. Upon St. Kilda these birds are found in vast numbers during the spring and summer months, breeding in the caverns and holes of the rocks; and, from the various uses to which the down, feathers, and oil of the young are applied, contribute essentially to the comfort of the inhabitants. They lay but one egg each, white, and of a large size, with a shell of very brittle texture. The young are hatched about the middle of June, and are fed with *oil* thrown up by the parents (the produce of the food upon which they subsist), and, as soon as fledged, are eagerly sought for by the natives, although often at the risk of life, in scaling the tremendous and overhanging cliffs in which they nestle. Like most of the group, these birds have the power of ejecting oil with much force through their tubular nostrils, which is used as the principal mode of defence; it becomes an essential point, therefore, that they should be taken and killed by surprise, in order to prevent the loss of a liquid so requisite for the comfort of the inhabitants, by supplying them with the necessary fuel for their lamps. The Fulmar is of voracious appetite, feeding upon all sorts of animal substance, particularly of an oily nature, such as the blubber of whales, seals, &c.; and for this purpose it follows in great numbers the track of the whale vessels, and is so greedy of its favourite food, as to be often seen alighting upon the wounded animal, when not quite dead, and immediately proceeding to break the skin with its strong hooked bill, and gorging itself with the blubber to repletion."

The Rev. Mr. SCORESBY, in his "*Arctic Regions*," vol. i. p. 528, gives the following account of its habits as observed by him in the polar seas.

"The Fulmar is the constant companion of the whale-fisher. It joins his ship immediately on passing the Shetland Islands, and accompanies it through the trackless ocean to the highest accessible latitudes. It keeps an eager watch for anything thrown overboard; the smallest particle of fatty substance can scarcely escape it. As such, a hook baited with a piece of fat

meat or blubber, and towed by a long twine over the ship's stern, is a means employed by the sailor boys for taking them. In the spring of the year, before they have glutted themselves too frequently with the fat of the whale, they may be eaten; and when cleared of the skin, and of every particle of yellow fatty substance lying beneath it, and well soaked in water, they are pretty good, particularly in 'sea pies.' They are remarkably easy and swift on the wing. They can fly to windward in the highest storms, and rest on the water with great composure in the most tremendous seas. But it is observed that, in heavy gales, they fly extremely low, generally skimming along the surface of the water. The Fulmar walks awkwardly, and with the legs so bent that the feet almost touch the belly. When on ice it rests with its body on the surface, and presents its breast to the wind. Like the Duck, it sometimes turns its head backward, and conceals its bill beneath its wing.

"Fulmars are extremely greedy of the fat of the whale. Though few should be seen when a whale is about being captured, yet, as soon as the flensing process commences, they rush in from all quarters, and frequently accumulate to many thousands in number. They then occupy the greasy track of the ship; and, being audaciously greedy, fearlessly advance within a few yards of the men employed in cutting up the whale. If, indeed, the fragments of fat do not float sufficiently away, they approach so near the scene of operations, that they are knocked down with boat hooks in great numbers, and sometimes taken up by the hand. The sea immediately about the ship's stern is sometimes so completely covered with them, that a stone can scarcely be thrown overboard without striking one of them. When anything is thus cast among them, those nearest the spot where it falls take the alarm, and these exciting some fear in others more remote, sometimes put a thousand of them in motion; but as, in rising into the air, they assist their wings, for the first few yards, by striking the water with their feet, there is produced by such a number of them, a loud and most singular splashing. It is highly amusing to observe the voracity with which they seize the pieces of fat that fall in their way; the size and quantity of the pieces they take at a meal; the curious chuckling noise which in their anxiety for dispatch they always make; and the jealousy with which they view, and the boldness with which they attack, any of this species that are engaged in devouring the finest morsels. They frequently glut themselves so completely, that they are unable to fly; in which case, when they are not relieved by a quantity being disgorged, they endeavour to get on the nearest piece of ice, where they rest until the advancement of digestion restores their wonted powers. Then, if opportunity admit, they return with the same gust to the banquet as before; and though numbers of the species may

be killed, and allowed to float about among them, they appear unconscious of danger to themselves.

"The Fulmar never dives, but when incited to it by the appearance of a morsel of fat under water. When in close view of any men, it keeps a continual watch both on the men and its prey; having its feet continually in motion, and yet perhaps not moving at all through the water. Its boldness increases with the numbers of its species that surround it. It is a very hardy bird. Its feathers being thick it is not easily killed with a blow. Its bite, from the crookedness, strength, and sharpness of its bill, is very severe.

"When carrion is scarce, the Fulmars follow the living whale; and sometimes, by their peculiar motions, when hovering at the surface of the water, point out to the fisher the position of the animal of which he is in pursuit. They cannot make much impression on the dead whale, until some more powerful animal tears away the skin; the epidermis and rete mucosum they entirely remove, but the true skin is too tough for them to make way through it."

PROCELLARIA GLACIALIS, Bonap. Syn., p. 369.

FULMAR PETREL, Nutt. Man., vol. ii. p. 330.

FULMAR PETREL, *Procellaria glacialis*, Aud. Orn. Biog., vol. iii. p. 446.

Male, 8, 18.

Not uncommon off the coast, from New York to Nova Scotia. Abundant on the banks of Newfoundland. Breeds in high latitudes.

Adult Male in summer.

Bill shorter than the head, robust, straight, slightly compressed, the tip curved. Upper mandible with the nostrils on the ridge, separated only by a thin partition, covered by an elevated horny case, and opening directly forwards, the sides convex, and separated by a groove from the nasal plate, as well as from the unguis, which is remarkably strong, curved and acute, the edges sharp, inflected, and slightly curved. Lower mandible with the angle long, rather wide, acute, the sides erect but convex, the edges sharp and inflected, the very short dorsal line ascending and slightly concave, the edges decurved at the end.

Head rather large, ovate. Neck rather short. Body full. Feet of moderate length, stout; tibia bare for a short space below; tarsus a little compressed, rather sharp before, covered all round with reticular scales, of which those on the anterior and posterior ridges are much smaller. Hind toe a slight prominence, with a conical obtuse claw; the fore toes long, slender, scutellate above, connected by striated entire webs, the fourth a little longer than the third, the second not much shorter. Claws rather small, arched, compressed, rather acute, that of the third toe with an inner thin edge.

Plumage free, close, elastic, blended; on the back and wings the feathers rather distinct. Wings long; primary quills rather broad, tapering, acuminate, the first longest, the rest graduated; secondary broad and rounded. Tail rather short, slightly rounded, of twelve broad, rounded feathers.

Bill, iris, and feet yellow, the latter tinged with green. The head, neck, and lower parts, are pure white; the back and wings light greyish-blue, the rump paler, the tail bluish-white; the primary quills and their coverts blackish-brown.

Length to end of tail $16\frac{1}{2}$ inches, to end of wings $17\frac{3}{4}$, to end of claws $11\frac{1}{4}$; extent of wings 30; wing from flexure 13; tail $4\frac{1}{4}$; bill along the back $1\frac{1}{2}$, along the edge of lower mandible $2\frac{2}{3}$; tarsus 2; outer toe $1\frac{2}{3}$, its claw $\frac{4}{5}$. Weight 1 lb. 4 oz.

The Female is similar to the male.

PACIFIC FULMAR.

PROCELLARIA PACIFICA, Aud.

(NOT FIGURED.)

Three skins transmitted to me by Mr. TOWNSEND appear to belong to two species of the Fulmar genus, distinct from that of the Atlantic seas. The first of these species I have named as above. An adult individual resembles the common *Procellaria glacialis* in form, proportions, and colour, but differs in having the bill much smaller, more compressed, with the angle of the lower mandible narrower, and the tips of both very much inferior in strength. It is about the same size as the species just mentioned, and shews no remarkable difference in the wings or tail. Besides being more compressed, its bill presents a character, which, if universal, is perfectly distinctive; the upper outline of the united nasal tubes is concave in the Atlantic Fulmar, and its ridge flattened; whereas the outline of these tubes is straight in the Pacific species, and its ridge distinctly carinate.

PACIFIC FULMAR, *Procellaria pacifica*, Aud. Orn. Biog., vol. v. p. 331.

Adult, 18 ; wing, $12\frac{1}{2}$; tail, $4\frac{1}{2}$; bill, $1\frac{1}{2}$.

North-west coast of America. Abundant.

Adult.

Bill shorter than the head, robust, straight, compressed, the tip curved. Upper mandible with the nostrils on the ridge, separated by a thin septum, covered by an elevated horny case, and opening directly forwards, the sides erect, convex, and separated by a groove from the nasal plate, as well as from the unguis, which is strong, decurved, and acute, the edges sharp, inflected, and slightly recurved from the base to the unguis. Lower mandible with the angle long, narrow, acute, the sides erect, with a groove in their whole length, the edges sharp and direct, the very short dorsal line ascending and slightly concave, the edges decurved at the end.

Head rather large, ovate ; neck rather short. Feet of moderate length, stout ; tibia bare for a short space below ; tarsus a little compressed, covered all round with reticular scales, of which those on the anterior and posterior thin ridges are much smaller. Hind toe a slight prominence, with a conical rather obtuse claw ; the fore toes long, slender, scutellate above, connected by striated entire webs, the fourth a little longer than the third, the second or inner not much shorter. Claws rather small, slightly arched, compressed, acute, that of the third toe with an inner thin edge. Plumage full, close, elastic, blended ; on the back and wings the feathers rather distinct. Wings long : primary quills rather broad, tapering to a roundish point having a minute acumen, the first four-twelfths longer than the second, which exceeds the third by half an inch ; secondary quills broad and rounded. Tail short, rounded, of fourteen rounded feathers, of which the lateral are one inch shorter than the middle ; the lower tail-coverts very strong and of the same length as the tail-feathers.

Bill and feet yellow. The head, neck, and lower parts are pure white ; the back and wings light greyish-blue, but most of the feathers, including those of the tail, becoming dark grey toward the end ; the primary quills and their coverts are blackish-brown, tinged with grey.

Length to end of tail 18 inches ; bill along the ridge $1\frac{9}{12}$; nasal case $\frac{6\frac{1}{2}}{12}$; wing from flexure $12\frac{9}{12}$; tail $4\frac{1}{2}$; tarsus $1\frac{1\frac{1}{2}}{12}$; hind toe $\frac{9}{12}$, its claw $\frac{3}{12}$; second toe $1\frac{1\frac{1}{2}}{12}$, its claw $\frac{5\frac{1}{2}}{12}$; third toe $2\frac{2}{12}$, its claw $\frac{7}{12}$; fourth toe $2\frac{1}{4}$, its claw $\frac{4\frac{1}{2}}{12}$.

The young bird is of a uniform dull light dusky-grey colour ; a patch before the eye and the primary quills dusky. Its bill and feet are also yellow ; the former as in the adult ; the outline of its nasal case straight, its ridge carinate.

Length to end of tail $19\frac{1}{4}$ inches ; bill along the ridge $1\frac{10}{12}$, nasal case $\frac{7\frac{1}{2}}{12}$; wing from flexure $12\frac{9}{12}$; tail $4\frac{9}{12}$.

SLENDER-BILLED FULMAR.

PROCELLARIA TENUIROSTRIS, *Aud.*

(NOT FIGURED.)

This species agrees in general with the last described ; but its bill is much more elongated, comparatively slender, and with the nasal case, half of the unguis of the upper mandible, and the tip of the lower, black. The outline of the nasal case is a little concave, and its ridge is somewhat carinate. Whether this individual be of another species, or of the same, having an accidentally elongated bill, cannot perhaps be determined without a series of specimens ; but it is probably a true species, as neither of the other two have the bill black in any part or at any period. Supposing it to be distinct, I have named it the Slender-billed Fulmar, *Procellaria tenuirostris*.

The following note from Mr. TOWNSEND was appended to this specimen : —“ Within a day’s sail from the mouth of the Columbia river. Its habits are very similar to those of *Procellaria capensis*, keeping constantly around the vessel, and frequently alighting in her wake for the purpose of feeding. They are easily taken with a hook baited with pork, and at times, particularly during a gale, they are so tame as almost to allow themselves to be taken with the hand. The stomachs of most of those that I captured were found to contain a species of sepia and grease.”

Length to end of tail $18\frac{1}{2}$ inches ; bill along the ridge $2\frac{1}{2}$; nasal case $\frac{7}{2}$; wing from flexure 13 ; tail 5 ; tarsus $1\frac{1}{2}$; hind toe $\frac{1}{2}$, its claw $\frac{3}{2}$; outer toe $2\frac{3}{2}$, its claw $1\frac{1}{2}$.

SLENDER-BILLED FULMAR, *Procellaria tenuirostris*, Aud. Orn. Biog., vol. v. p. 333.

Length, $18\frac{1}{2}$; wing, 13 ; tail, 5 ; bill, $2\frac{1}{2}$.

Off the Columbia river. Common.

GENUS IV.—PUFFINUS, *Briss.* SHEARWATER.

Bill of the length of the head, rather slender, nearly as deep as broad at the base, much compressed toward the end, nearly straight, being slightly recurved, with the tips decurved; upper mandible with the cere at the base, extending narrow to the nostrils, which are dorsal, each covered with a lateral convex plate, and opening anteriorly, with an elliptical aperture, dorsal line as far as the nostrils nearly straight, then suddenly deflected, afterwards slightly concave, towards the end decurved, the ridge very broad and convex at the base, narrower beyond the nostrils, from which a groove runs obliquely on each side, sides convex, nearly erect, edges sharp, tip or unguis strong, decurved, much compressed, very acute; lower mandible with the angle very long and narrow, the dorsal line beyond it decurved, the sides sloping outwards, the edges sharp and inflected, the unguis decurved, acute. Head rather large, oblong; neck rather short; body moderate. Feet rather large; tibia bare for a short space below; tarsus of moderate length, compressed, reticulated with angular scales; hind toe obsolete, but with a small conical deflected claw; fore toes long, slender, connected by webs; outer toe slightly longer than third. Claws arched, compressed, acute. Plumage full, close, elastic, rather compact above. Wings very long, narrow, the first quill longest. Tail of moderate length, graduated, of twelve rounded feathers.



Wandering Tropicbird
Male.

Drawn from Nature by J. J. Audubon F.R.S.

Lith. Printed & Col'd by J. T. Bowen, Philad.

THE WANDERING SHEARWATER

PUFFINUS CINEREUS, *Lath.*

PLATE CCCCLVI.—MALE.

I have found this species ranging from the Gulf of St. Lawrence to that of Mexico, but have very seldom seen it near the coast. While sailing round Nova Scotia, on my way to Labrador, early in June, I observed one evening about sunset, a great number flying from the rocky shores, which induced me to think that they bred there. Scarcely one was to be seen during the day, and this circumstance strengthened my opinion, as I was aware that these birds are in the habit of remaining about their nests at that time. In September the case is very different; for they are then seen far out at sea, at all hours by day and through the night.

In calm weather, they are fond of alighting on the water, in company with the Fulmars, and are then easily approached. They swim buoyantly, and have a graceful appearance while playing among themselves. Two that had been caught with hooks, walked as well as Ducks, and made no pretence of sitting on their rumps, as some writers have said they do. On being approached, they opened their bills, raised their feathers, and squirted an oily substance through their nostrils, which they continued to do when held in the hand, at the same time scratching with their sharp claws and bills. They refused all sorts of food; and as they were unpleasant pets, they were set at liberty. To my great surprise, instead of flying directly off, as I expected, they launched toward the water, dived several yards obliquely, and on coming to the surface, splashed and washed themselves for several minutes before they took to wing, when they flew away with their usual ease and grace.

The flight of this wanderer of the ocean is extremely rapid and protracted. When it blows hard, it skims along the troughs of the waves on extended wings in large curves, shewing its upper and lower parts alternately, evidently with the view of being aided by the wind. In calm weather its flight is much lower and less rapid, and it rarely throws its body sideways, but seems to feed more abundantly than during boisterous weather. Like the small Petrels, it frequently uses its feet to support itself on the surface, without actually alighting. In the stomach of those which I opened, I

found fishes, portions of crabs, sea-weeds, and oily substances. It does not appear that this species goes far north, as was formerly supposed ; for none of the late northern voyagers mention having seen it, although they found the Fulmar abundant.

PUFFINUS CINEREUS, Bonap. Syn., p. 370.

CINEREOUS PUFFIN, Nutt. Man., vol. ii. p. 334.

WANDERING SHEARWATER, *Puffinus cinereus*. Aud. Orn. Biog., vol. iii. p. 555.

Male, 20, 45.

Common off the shores, from the Gulf of St. Lawrence to that of Mexico. Abundant off Nova Scotia. Ranges to a great distance at sea in autumn and winter.

Adult Male.

Bill about the same length as the head, rather slender, nearly as deep as broad at the base, compressed towards the end, slightly curved upwards, with the tips decurved. Upper mandible with a cere at the base extending narrow to the nostrils, which are placed above, each covered with a lateral convex plate, and open anteriorly, with an elliptical aperture ; the dorsal line as far as the nostrils nearly straight, then suddenly deflected, after which it is slightly concave, but towards the tip incurved, the ridge very broad and convex at the base, narrower beyond the nostrils, from which a groove proceeds obliquely to the commencement of the hooked tip ; the sides convex and nearly erect, the edges sharp. Lower mandible with the angle very long and narrow, the dorsal line beyond it, decurved, the sides sloping outwards, the edges sharp and inflected, the curved tip grooved above.

Head rather large, oblong, rather compressed. Neck short and stout. Body moderate, deeper than broad. Wings long. Feet rather large ; tibia bare for a short space below ; tarsus of moderate length, compressed, covered all round with angular scales, the hind ones much smaller ; hind toe obsolete, but with a small conical deflected claw ; fore toes long, slender, connected by reticulated webs, the lateral ones with thin edges ; outer toe slightly longer than the third, but with a shorter claw, the first considerably shorter ; toes scutellate above ; claws arched, compressed, acute, that of third toe with an enlarged sharp edge.

Plumage soft, close, blended ; on the back compact, the feathers rounded. Wings very long, pointed ; primary quills tapering, the first longest, the second considerably shorter, the rest rapidly graduated ; secondaries short, broad, obliquely rounded, the inner not elongated. Tail of moderate length, graduated, of twelve rounded feathers.

Bill yellowish-green, the tips brownish-black, tinged with green. Edges



Manks Shearwater.

Male.

Drawn from Nature by J. J. Audubon F.R.S.E.L.S.

Engr. Printed & col'd by J. T. Bowen Philad^a.

of cyclids dark grey; iris brown. Feet light greenish-grey, webs and claws yellowish flesh-colour. The upper parts in general are deep brown, the hind neck paler and tinged with grey; the primary quills and tail brownish-black. The lower parts are greyish-white; the lower wing-coverts white, those next the edge of the wing greyish-black towards the end, the axillary feathers white, greyish-brown towards the end, lower tail-coverts similar.

Length to end of tail 20 inches, to end of wings $21\frac{1}{4}$, to end of claws $21\frac{1}{4}$; extent of wings 45; wing from flexure $13\frac{1}{4}$; tail 5; bill along the back $2\frac{1}{2}$, along the edge of lower mandible $2\frac{3}{4}$; tarsus $2\frac{1}{4}$; middle toe $2\frac{1}{2}$, its claw $\frac{1}{2}$. Weight 1 lb. 9 $\frac{3}{4}$ oz.

THE MANKS SHEARWATER.

PUFFINUS ANGLORUM, *Ray*.

PLATE CCCCLVII.—ADULT.

Although I have procured this species to the westward of the banks of Newfoundland, or between their soundings and the American coast, I am unable to say anything of importance respecting its habits as observed by myself. This species formerly inhabited a small islet close to the Isle of Man, but appears to have now entirely deserted it. In the Orkneys, however, it is still abundant, and the eggs and young are in much request there. It arrives in March, and, when the young are able to fly, betakes itself to the open sea, disappearing towards the approach of winter. The British writers who have described it inform us, that it stands nearly erect, flies with great rapidity, feeds on marine animal substances of all kinds, and, when taken, squirts out an oily fluid from its nostrils in the manner of the Petrels. It is said to breed in burrows, and to lay only a single egg, of a white colour and elliptical form, about the size of that of a domestic fowl.

PUFFINUS ANGLORUM, Bonap. Syn., p. 371.

SHEARWATER PETREL, Nutt. Man., vol. ii. p. 336.

MANKS SHEARWATER, *Puffinus anglorum*, Aud. Orn. Biog., vol. iii. p. 604.

Adult, 15, 32.

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Not uncommon off the coast of Maine during summer. Breeds on Sable Island, off Nova Scotia. Ranges, at times, to great distances seaward.

Adult.

Bill about the length of the head, rather slender, a little compressed, straightish, the tips curved. Upper mandible with the dorsal line convex, and sloping at the base, afterwards slightly concave, on the unguis curved, the ridge broadly convex, narrowed towards the end, the sides convex, the edges sharp and slightly inflected; the unguis stout, curved, rather acute. Nostrils tubular, approximated, dorsal; the narrow nasal groove extending to the unguis. Lower mandible with the angle very long and narrow, the short dorsal line beyond it decurved, the sides convex and sloping inwards, the edges sharp and inflected.

Head of moderate size, ovate, narrowed before. Neck of moderate length. Body elongated. Feet of moderate size; tibia feathered to near the joint; tarsus compressed, anteriorly and posteriorly sharp, covered all over with diversiform scales, of which a series in the inner side is scutelliform. Toes rather long, slender, excepting the first, which is a mere conical knob principally composed of the claw; anterior toes connected by striated webs, of which the margin is concave, scutellate above, the third and fourth longest and about equal. Claws small, compressed, slightly arched, obtuse, that of third toe with the inner edge a little dilated.

Plumage dense, soft, blended, on the upper parts rather compact. Feathers of the fore part of the head very short. Wings long, sharp; primaries tapering, rounded; first longest, the rest regularly graduated; secondaries rather short, rounded. Tail rounded, of twelve feathers.

Bill deep greenish-black. Iris dark brown. Inner and middle of outer side of tibia dingy orange, the rest greenish-black, as is the fourth toe and outer side of the third, the inner side of the latter and the whole of the second dingy orange; the webs much paler; claws brownish-black. All the upper parts are brownish-black, the lower white.

Length to end of tail 15 inches, to end of wings $15\frac{1}{2}$, to end of claws 16; extent of wings 32; wing from flexure $9\frac{3}{4}$; tail $3\frac{1}{2}$; bill along the back $1\frac{9}{16}$, along the edge of lower mandible $1\frac{1}{2}$; tarsus $1\frac{1}{2}$; middle toe $1\frac{1}{2}$, its claw $\frac{1}{12}$. Weight 15 oz.

The Female is similar to the male.



Dusky Shearwater.
Male in Spring.

Drawn from Nature by J. J. Audubon F.R.S.E.L.S.

Lith^d Printed & Col^d by J. T. Bowen Philad^a.

THE DUSKY SHEARWATER.

PUFFINUS OBSCURUS, *Lath.*

PLATE CCCCLVIII.—MALE.

On the 26th of June, 1826, while becalmed on the Gulf of Mexico, off the western shores of Florida, I observed that the birds of this species, of which some had been seen daily since we left the mouth of the Mississippi, had become very numerous. The mate of the vessel killed four at one shot, and, at my request, brought them on board. From one of them I drew the figure which has been engraved. The notes made at the time are now before me, and afford me the means of presenting you with a short account of the habits of this bird.

They skim very low over the sea in search of the floating bunches of marine plants, usually called the *gulf weed*, so abundant here as sometimes to occupy a space of half an acre or more. In proceeding, they flap their wings six or seven times in succession, and then sail for three or four seconds with great ease, having their tail much spread, and their long wings extended at right angles with the body. On approaching a mass of weeds, they raise their wings obliquely, drop their legs and feet, run as it were on the water, and at length alight on the sea, where they swim with as much ease as Ducks, and dive freely, at times passing several feet under the surface in pursuit of the fishes, which, on perceiving their enemy, swim off, but are frequently seized with great agility. Four or five, sometimes fifteen or twenty of these birds, will thus alight, and, during their stay about the weeds, dive, flutter, and swim, with all the gaiety of a flock of Ducks newly alighted on a pond. Many Gulls of different kinds hover over the spot, vociferating their anger and disappointment at not being so well qualified for supplying themselves with the same delicate fare. No sooner have all the fishes disappeared than the Petrels rise, disperse, and extend their flight in search of more, returning perhaps in awhile to the same spot. I heard no sound or note from any of them, although many came within twenty yards of the ship and alighted there. Whenever an individual settled in a spot, many others flew up directly and joined it. At times, as if by way of resting themselves, they alighted, swam lightly, and dipped their bills frequently in the water, in the manner of Mergansers.

I preserved the skins of the four specimens procured. One of them I sent to the Academy of Natural Sciences of Philadelphia, by Captain JOHN R. BUTLER, of the ship *Thalia*, then bound from Havana to Minorca. Two others were presented to my excellent friend Dr. TRAILL, on my first becoming acquainted with him at Liverpool.

I found the wings of this species strong and muscular for its size, this structure being essentially requisite for birds that traverse such large expanses of water, and are liable to be overtaken by heavy squalls. The stomach resembles a leather purse, four inches in length, and was much distended with fishes of various kinds, partially digested or entire. The œsophagus is capable of being greatly expanded. Some of the fishes were two and a half inches in length, and one in depth. The flesh of this Petrel was fat, but tough, with a strong smell, and unfit for food; for, on tasting it, as is my practice, I found it to resemble that of the porpoises. No difference is perceptible in the sexes.

While on board the United States revenue cutter *Marion*, and in the waters of the Gulf Stream opposite Cape Florida, I saw a flock of these birds, which, on our sailing among them, would scarcely swim off from our bows, they being apparently gorged with food. As we were running at the rate of about ten knots, we procured none of them. I have also seen this species off Sandy Hook.

PUFFINUS OBSCURUS, Bonap. Syn., p. 371.

DUSKY PETREL, Nutt. Man., vol. ii. p. 337.

DUSKY PEIBEL, *Puffinus obscurus*, Aud. Orn. Biog., vol. iii. p. 620.

Male, 11, 26.

Abundant during summer in the Gulf of Mexico, and off the coast eastward to Georgia. Some wander as far as Long Island.

Adult Male.

Bill about the length of the head, straight, somewhat cylindrical, the tips curved. Nostrils tubular, separate, inclosed in a horny sheath, and dorsal, the outline straight, curved on the unguis, the sides nearly erect, convex, the edges sharp, hard, and inflected, the tip decurved, strong. Lower mandible straight, the angle very narrow and extending nearly to the tip, the dorsal line beyond it decurved, the sides convex and inclining inwards, the edges sharp and inflected.

Head of moderate size. Neck of ordinary length; body ovate. Feet stout; tibia bare a short way above the joint; tarsus of moderate length, rather stout, reticulate; hind toe a very slight knob, with a small conical claw; fore toes long, slender, connected by reticulated webs with concave

margins, the outer toe slightly longer than the third. Claws small, slightly arched, compressed, obtuse.

Plumage soft, full; the feathers rounded, those of the back and wings rather compact. Wings long; primaries tapering, rounded, the first longest, the rest rapidly graduated; secondaries of moderate length, rounded. Tail rather short, much rounded, of twelve feathers.

Bill light blue, the tips black, mouth light blue. Edges of eyelids light blue, iris bluish-black. Outside of tarsus and toes indigo-black, inside and webs pale yellowish-flesh-colour; claws bluish-black. The upper parts are sooty-black, the lower pure white.

Length to end of tail 11 inches, to end of wings $10\frac{1}{2}$, to end of claws $11\frac{1}{2}$; extent of wings $26\frac{1}{2}$; bill along the back $1\frac{4}{5}$, along the edge of lower mandible $1\frac{3}{4}$; tarsus $1\frac{1}{2}$; outer toe 2, its claw $2\frac{1}{2}$.

GENUS V.—THALASSIDROMA, *Vigors*. PETREL.

Bill shorter than the head, slender, as high as broad at the base, extremely compressed at the end; upper mandible with the nostrils dorsal forming a tube on its ridge at the base, on which the dorsal line is concave and ascending, then abrupt, afterwards, for a short space, straight, and lastly decurved, the sides separated by a groove, convex, the edges sharp and inflected, the tip decurved, slender, acute; lower mandible with the angle rather long, narrow, and pointed, the dorsal line beyond it decurved, the sides erect, the edges sharp, the tip decurved, acute. Head of moderate size, rounded above; neck short; body rather slender. Feet rather long, slender; tibia bare at its lower part; tarsus slender, reticulate; hind toe minute, with a conical deflected claw; anterior toes of moderate length, slender, scutellate, webbed, the third and fourth about equal. Claws slender, arched, compressed, acute. Plumage very soft and blended, the feathers distinct only on the wings, which are very long, with the primaries a little incurved toward the end, the second longest, the first and fourth about equal; tail

emarginate or even, of twelve feathers. Tongue much flattened, tapering to a horny point; œsophagus wide, within the thorax enormously distended, and with the proventriculus forming an ovate sac, which is recurved; stomach very small; intestine short, of moderate width; cœca small; cloaca globular.

LEACH'S PETREL.—FORKED-TAILED PETREL.

THALASSIDROMA LEACHII, *Temm.*

PLATE CCCCLIX.—MALE AND FEMALE.

Before describing the habits of this bird, I think it necessary to speak of the three distinct species which are at times found near our coasts, and of which I have found two breeding within the Union. The present species is the largest; that named after WILSON the next in size; and the one called the Stormy Petrel the least. Until I had met with the whole of these species near our coast, I, like others, thought that the last mentioned kept nearer to Europe than it in reality does at certain seasons.

In August, 1831, I was on board of the American packet-ship *Columbia* commanded by my friend JOSEPH C. DELANO, Esq., who had promised that, in case of a calm occurring, he would allow me to have a boat manned to go in search of birds. The day is not given, because I never keep a journal while crossing the Atlantic; but as I had left England on the first of the month, and was then on the banks of Newfoundland, it must have been towards the latter part of it, when the weather suddenly became quite calm and beautiful. "Mother Carey's Chickens" were by hundreds around the noble ship, and although ill in consequence of the sickness which never leaves me at sea, I asked for a boat and some hands to row me about for an hour or so. This was granted, guns and ammunition were placed in the yawl, and my assistant, Mr. HENRY WARD of London, an officer, and two sailors, accompanied me. We had three guns, which were alternately loaded and handed to me. In the course of about an hour, twenty-five or thirty Petrels were shot, together with some Fulmars. Had you been looking on, you might perhaps have laughed at me on seeing that the moment after I fired, I was obliged to lean over the side of the bark to relieve myself from the dis-



Leach's Petrel. Forked-tailed Petrel.

Drawn from Nature by J.J. Audubon FRS&LS

1. Male 2. Female.

Lith. Printed & Col'd by J.T. Bowen. Philad.

treassing state of my stomach. On returning to the ship, my companions nimbly ascended the chains; but although when on land I am pretty firm and active, I was now quite unfit for service, and therefore was hoisted in a chair. Once on deck, I laid myself down on a mattress, my wife attended to me, and I gradually became relieved, as the ship stood, to use the words of my kind captain, "as still as if on the stocks." There were the dead birds nicely arranged on a board by my side; the wounded ones were placed in a cage, and I began to examine them all with care. To my great surprise, I found among them all the three species mentioned above. Sixteen of these birds were beautifully prepared by Mr. WARD, and the rest were placed in spirits, after I had made correct outlines of each species, and taken their exact dimensions and weight. The drawings, however, I was unable to finish on account of the giddiness, which seldom leaves me while at sea. The calm continued the whole of the next day, and, laying myself down on the top of the round-house, I had ample opportunities of observing the habits of the three species, while thus at a distance from land.

My esteemed friend the Prince of MUSIGNANO has stated that the Forked-tailed Petrel is less numerous near the American coast than the species named after WILSON. It is true that it rarely goes so far south, but in the vicinity of Massachusetts, and from thence to Newfoundland, it is by far the most abundant of the two; and it breeds on all suitable places from the Islands of Mount Desert to the last mentioned country.

The species of this genus with which I am acquainted all ramble over the seas, both by night and by day, until the breeding season commences, when they remain in their burrows, under rocks, or in their fissures, until towards sunset, when they start off in search of food, returning to their mates or young in the morning, and feeding them then. I feel pretty confident that these birds, like Owls, can hold out against hunger for many hours, and are satisfied with one abundant meal in the day. WILSON was of a different opinion, but I believe he never found these birds breeding.

The Forked-tailed Petrel emits its notes night and day, and at not very long intervals, although it is less noisy than Wilson's Petrel. They resemble the syllables *pewr-wit*, *pewr-wit*. Its flight differs from that of the other two species, it being performed in broader wheelings, and with firmer flappings, in which respect it resembles that of the Night Hawk, *Chordeiles virginianus*, while that bird is passing low over the meadows or the waters. It is more shy than the other species, and when it wheels off after having approached the stern of a ship, its wanderings are much more extended before it returns. I have never seen it fly close around a vessel, as the others are in the habit of doing, especially at the approach of night; nor do I think that it ever alights on the rigging of ships, but spends the hours of

darkness either on the water, or on low rocks or islands. It also less frequently alights on the water, or pats it with its feet, probably on account of the shortness of its legs, although it frequently allows them to hang down. In this it resembles the *Thalassidroma pelagica*, and Wilson's Petrel has a similar habit during calm weather. I have seen all the three species immerse their head into the water, to seize their food, and sometimes keep it longer under than I had expected.

About the first of June, the species separate, collect in numbers, and return to their breeding places. I state so from the report of persons on whose testimony I can rely, and who have assured me that, like the Guillemots, they revisit their haunts each spring for years in succession. They now fly in front of the high rocks, in the manner of our Purple Martin when it first arrives at its well known box, passing and repassing a thousand times in the day, enter their dark and narrow mansions, or stand in the passage, and emit their cries, as the bird just mentioned is wont to do on similar occasions. Now they alight on some broad shelf, and walk as if about to fall down, but with considerable ease, and at times with rapidity. Now and then the mated birds approach each other, and, I believe, disgorge some food into each other's mouths, although I am not absolutely certain that they do so, having only observed them at such times by means of a glass. They collect grasses and pebbles, of which they form a flat nest, on which a single white egg is deposited, which measures an inch and a quarter in length, by seven-eighths in breadth, is nearly equally rounded at both ends, and looks very large for the size of the bird. When boiled, it has a musky smell, but is palatable. When you pass close to the rocks in which they are, you easily hear their shrill querulous notes; but the report of a gun silences them at once, and induces those on the ledges to betake themselves to their holes.

The Forked-tailed Petrel, like the other species, feeds chiefly on floating mollusca, small fishes, crustacea, which they pick up among the floating seaweeds, and greasy substances, which they occasionally find around fishing-boats or ships out at sea. When seized in the hand, it ejects an oily fluid through the tubular nostrils, and sometimes disgorges a quantity of food. I could not prevail on any of those which I had caught to take food.

Thalassidroma Leachii, Bonap. Syn., p. 367.

FORK-TAILED STORMY PETREL, *Thalassidroma Leachii*, Nutt. Man., vol. ii. p. 326.

FORKED-TAILED PETREL, *Thalassidroma Leachii*, Aud. Orn. Biog., vol. iii. p. 434.

Male, 8, 18½.

Common on the Banks of Newfoundland, and at times off the coast of

Massachusetts, Maine, and Nova Scotia. Breeds on the shores of Baffin's Bay.

Adult Male.

Bill shorter than the head, slender, straight, with the tips curved, as broad as high at the base, extremely compressed at the end. Upper mandible with the nostrils forming a tube on its ridge at the base, beyond which the dorsal line is for a short space straight, then decurved, the ridge narrow and separated from the convex sides by a narrow groove, the edges sharp, inflected, the tip compressed, incurved. Lower mandible with the angle rather long, narrow and pointed, the dorsal line beyond it decurved, the sides erect, the edges sharp, the tip decurved.

Head of ordinary size, roundish, anteriorly narrowed: Neck short. Body rather slender. Feet rather long, slender; tibia bare at its lower part; tarsus slender, reticulate all round. Hind toe minute, with a conical claw; anterior toes of moderate length, slender, scutellate above, connected by striated webs with concave margins; the third and fourth toes longest, and about equal. Claws slender, arched, compressed, acute.

Plumage very soft, blended, the feathers distinct only on the wings, which are very long; primary quills tapering but rounded, the outer four a little incurved at their extremities, the second longest, the third almost equal, the first and fourth about the same length, the rest rapidly graduated; outer secondaries incurved, obliquely rounded; inner longer, tapering, straight. Tail deeply forked, of twelve broad, rounded feathers.

Bill and feet black. Iris dark brown. The general colour of the plumage is dark greyish-brown, the quills and tail brownish-black, the smaller wing-coverts and inner secondaries light greyish-brown; the rump, sides of the abdomen, and exterior lower tail-coverts, white.

Length to end of tail 8 inches, to end of wings $8\frac{1}{2}$; extent of wings $18\frac{1}{2}$; wing from flexure $6\frac{1}{2}$; tail 3; bill along the back $\frac{3}{12}$, along the edge of lower mandible $\frac{1}{2}$; tarsus 1; middle toe $\frac{1}{12}$, its claw $\frac{1}{12}$. Weight $1\frac{5}{8}$ oz.

The Female is exactly similar to the male.

WILSON'S PETREL.—MOTHER CAREY'S CHICKEN.

THALASSIDROMA WILSONII, *Bonap.*

PLATE CCCCLX.—MALE AND FEMALE.

A long voyage would always be to me a continued source of suffering, were I restrained from gazing on the vast expanse of the waters, and on the ever-pleasing inhabitants of the air that now and then appear in the ship's wake. The slightest motion of the vessel effectually prevents me from enjoying the mirth of my fellow passengers, or sympathizing with them in their sickness. When the first glimpse of day appears, I make my way on deck, where I stand not unlike a newly hatched bird, tottering on feeble legs. Let the wind blow high or not, I care little which, provided it waft me toward the shores of America. If the sky be clear, the first sight of the sun excites emotions of gratitude towards the Being by whose power it was formed, and sent forth to shed its benign influence on surrounding worlds. Silent adoration occupies my soul, and I conclude with ardent wishes for the happiness of friends left far behind, and those toward whom I am proceeding. But now, ever flapping its winglets, I have marked the little bird, dusky all over save a single spot, the whiteness of which contrasts with the dark hue of the waters and the deep tone of the clear sky. Full of life and joy it moves to and fro, advances toward the ship, then shoots far away, gambols over the swelling waves, dives into their hollows, and twitters with delight as it perceives an object that will alleviate its hunger. Never fatigued, the tiny Petrels seldom alight, although at times their frail legs and feet seem to touch the crest of the foaming wave. I love to give every creature all the pleasure I can confer upon it, and towards the little things I cast over the stern such objects as I know they will most prize. Social creatures! would that all were as innocent as you! There are no bickerings, no jealousies among you; the first that comes is first served; it is all the result of chance; and thus you pass your lives. But the clouds gather, the gale approaches, and our gallant bark is trimmed. Darkness spreads over the heavens, and the deep waters send back a blacker gloom, broken at intervals by the glimmer of the spray. You meet the blast, and your little wings bear you up against it for awhile; but you cannot encounter the full force of the tempest; and now you have all come close beneath me where



WILSON

Wilson's Petrel. Mother Curry's chicken.

Drawn from Nature by J. J. Audubon F.R.S.L.S.

1. Male. 2. Female

Letit Printed & Col'd by J. T. Bowen, Philad.

you glide over the curling eddies caused by the motion of the rudder. You shall have all possible attention paid you, and I will crawl to the camboose, in search of food to support your tiny frames in this hour of need. But at length, night closes around, and I bid you farewell.

The gale is over ; the clear blue of the sky looks clearer than ever, the sun's rays are brighter, on the quiet waters the ship seems to settle in repose, and her wings, though widely spread, no longer swell with the breeze. At a distance around us the dusky wanderers are enjoying the bright morning ; the rudder-fish, yesterday so lively, has ended its career, so violently was it beaten by the waves against the vessel ; and now the Petrels gather around it, as it floats on the surface. Various other matters they find ; here a small crab, there the fragments of a sea-plant. Low over the deep they range, and now with little steps run on the waters. Few are their notes, but great their pleasure, at this moment. It is needless for me to feed them now, and therefore I will return to my task.

It would be extremely difficult for any individual to determine the extent of the movements of the three species of Petrel seen on the waters of the Atlantic. My opinion is that until their breeding places are repeatedly visited by naturalists, little can be known respecting the range of their flight. I have crossed the ocean many times, and have always paid more or less attention to these birds ; yet I am as ignorant of their migrations as my predecessors. I have rarely seen Wilson's Petrel farther to the eastward than the Azores, and beyond these islands it generally abandoned the vessel. Along the American coast, I have not met with it to the northward beyond the 51st degree of latitude ; while to the southward I have rarely observed many on the Gulf of Mexico ; nor do I believe that any breed on the shores of the Floridas, or on the Bahama Islands, as alleged by WILSON, who, it would appear, stated so from report. Petrels are rarely destroyed by men, quadrupeds, or rapacious birds, when breeding ; to the former they are of no value as an article of food, and by the latter they are seldom sought after ; consequently they are more likely to return to their breeding places than most other birds, many of which are frequently induced to abandon them on account of the persecutions to which they are subjected. I have found the Forked-tailed Petrel breeding on our coast, in the fissures of rocks above the reach of the spray, and Wilson's digging for itself burrows in the sand or loose earth, on low islands. The *Thalassidroma pelagica* I have never found breeding on any part of our coast ; but it is well known that it resorts to holes on certain of the Shetland Islands, among the blocks and stones of which the breaches are formed ; though it appears that in some spots, where the fishermen are in the habit of destroying them, many resort to the elevated fissures of the rocks, where also a few of the Forked-tailed species

occasionally breed. The latter then, though more abundant in America, belongs to Europe also. WILSON was not aware that the species now named after him was any thing else than "the Stormy Petrel, *Procellaria pelagica* of LINNÆUS;" and he remarks that it "is found over the whole Atlantic ocean, from Europe to North America, at all distances from land, and in all weathers."

Wilson's Petrel breeds on some small islands situated off the southern extremity of Nova Scotia, and called "Mud Islands," but which are formed of sand and light earth, scantily covered with grass. Thither the birds resort in great numbers, about the beginning of June, and form burrows of the depth of two or two and a half feet, in the bottom of which is laid a single white egg, a few bits of dry grass, scarcely deserving the name of a nest, having been placed for its reception. The egg measures an inch and a half in length, by seven-eighths of an inch in breadth, is almost equally rounded at both ends, and has a pure white colour. These Petrels copulate on the water, in the same manner as the Hyperborean Phalarope. By the beginning of August the young follow their parents to sea, and are then scarcely distinguishable from them. During incubation, they remain in the burrows, or at their entrance, rarely going to seek for food before the dusk.

On wing this species is more lively than the Forked-tailed, but less so than the Common Stormy Petrel. It keeps its wings nearly at right angles with its body, and makes considerable use of its feet, particularly during calm weather, when it at times hops or leaps for several feet, or pats the water, whilst its wings are extended upwards with a fluttering motion, and it inclines its head downwards to pick up its food from the water, and I have observed it immerse the whole head beneath the surface, to seize on small fishes, in which it generally succeeded. It can walk pretty well on the deck of a vessel, or any other flat surface, and rise from it without much difficulty. Its notes are different from those of the Forked-tailed Petrel, and resemble the syllables *kee-re-kee kee*. They are more frequently emitted at night than by day. I never could ascertain whether or not these birds alight on the rigging at night, but my opinion is that they do not, for the sailors, to whom I had offered premiums for catching some of them, told me that although they flew about them while aloft, they could not see one standing anywhere.

During my several visits to the coasts of the Floridas I saw scarcely any of these birds in the course of several months spent there, but I found them pretty abundant on returning towards Charleston. This species, like the others, feeds on mollusca, small fishes, crustacea, marine plants, excrements of cetaceous animals, and the greasy substances thrown from vessels. When

caught, they squirt an oily substance through the nostrils, and often disgorge the same. The sexes are similar in their external appearance.

STORMY PETREL, *Procellaria pelagica*, Wils. Amer. Orn., vol. vii. p. 90.

THALASSIDROMA WILSONII, Bonap. Syn., p. 367.

WILSON'S STORMY PETREL, Nutt. Man., vol. ii. p. 322.

WILSON'S PETREL, *Thalassidroma Wilsonii*, Aud. Orn. Biog., vol. iii. p. 486; vol. v. p. 645.

Male, 7½, 15½.

Wanders from the Gulf of Mexico, off the whole Atlantic coast to Baffin's Bay, and often almost across the ocean towards Europe. Breeds in vast numbers from Maine to Baffin's Bay.

Adult Male.

Bill shorter than the head, slender, straight, with the tips curved, as broad as high at the base, compressed towards the end. Upper mandible with the nostrils forming a tube at the base, beyond which, for a short space, the dorsal line is straight, then decurved, the ridge narrow and separated from the sides by a narrow groove, the edges sharp, inflected, the tip compressed, obliquely deflected. Lower mandible with the angle rather long, narrow and pointed, the dorsal line beyond it very slightly concave and decurved, the sides erect, the edges sharp, the tip slightly decurved.

Head of moderate size, roundish, anteriorly narrowed. Neck short. Body rather slender. Feet long, very slender; tibia bare at its lower part; tarsus very slender, reticulate, anteriorly with a long plate which is very slightly marked. Hind toe conical, so minute as scarcely to be perceptible; anterior toes rather long and extremely slender, obscurely scutellate above, connected by striated webs with concave margins; the third and fourth toes longest, and about equal. Claws slender, arched, depressed, acute.

Plumage very soft, blended, the feathers distinct only on the wings, which are very long; primary quills tapering, but rounded, the third longest, the second slightly longer than the fourth, the first much shorter and a little longer than the sixth; secondaries short, the outer incurved, obliquely rounded. Tail rather long, even, of twelve broad rounded feathers.

Bill and feet black, but the webs yellow excepting at the margin. Iris dark brown. The general colour of the plumage is dark greyish-brown, the quills and tail brownish-black, the outer secondary wing-coverts and some of the secondary quills light greyish-brown, and tipped with whitish. The rump, sides of the abdomen, and exterior lower tail-coverts, white.

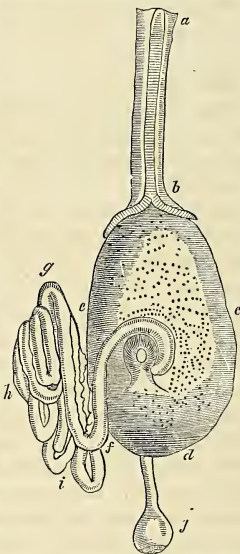
Length to end of tail 7½ inches, to end of wings 8, to end of claws 8; extent of wings 15½; wing from flexure 6; tail 3½; bill along the back 7½.

along the edge of lower mandible $\frac{8}{12}$; tarsus $1\frac{5}{8}$; middle toe 1, its claw $\frac{3}{12}$. Weight $1\frac{1}{8}$ oz.

Adult Female.

The female resembles the male.

The palate is marked behind with four longitudinal ridges, which are papillate, and before with three ridges; the mouth $4\frac{1}{2}$ twelfths in width, but capable of being dilated to 9 twelfths; the tongue $\frac{1}{2}$ inch long, triangular and acuminate, at the base concave and emarginate, flat above, with a slight median groove. The lobes of the liver are equal, their length $7\frac{1}{2}$ twelfths. The œsophagus, *a b*, has a uniform width of 3 twelfths until it enters the thorax, when it at once expands into an immense ovate sac, *b c d e*, 1 inch 11 twelfths long, viewed anteriorly 1 inch 1 twelfth in breadth, laterally 1 inch 2 twelfths. This sac is formed, properly speaking, of the proventriculus; its walls are extremely thin and transparent, and it is studded all over with roundish glandules placed at a considerable distance from each other. It curves upwards in front, and becomes narrowed to 2 twelfths, ending in the stomach, which is an extremely diminutive gizzard, of an oval form, only $3\frac{1}{2}$ twelfths long, and 3 twelfths in breadth. The stomach is thus reversed in position, its fundus being anterior; and accordingly the intestine, *f g h i*, comes off from its left instead of its right side, forms a semicircular sweep round the fundus, then passes backward for 1 inch, to *f*, bends forward to the liver, at *g*, and forms a number of loops, *g h i*, making in all 9 turns. The duodenum is 1 inch $\frac{2}{4}$ twelfth wide, and the intestine continues so for half its length, when it gradually contracts to $\frac{3}{4}$ twelfth, and is rather less in the rectum, which is terminated by a very small globular cloaca, *j*, $3\frac{1}{2}$ twelfths in diameter. There are no cœca. The intestine measures 14 inches. The stomach properly so called is lined by a rugous epithelium, and is in fact a true gizzard. It contains a quantity of shell-sand. The inner surface of the proventriculus is soft and smooth; that of the œsophagus longitudinally plicate. The trachea is $1\frac{1}{2}$ inches long, from $1\frac{1}{2}$ twelfths to 1 twelfth in breadth, flattened, with rings 84 in number, slender, and unossified. Bronchi wide, of 25 half rings.





Leach's Petrel - Mother Carey's chicken.

Drawn from Nature by J. Audubon FRS&LS

1. Male 2. Female.

Printed & Col'd by J. Bowen Philad^a

LEAST PETREL.—MOTHER CAREY'S CHICKEN

THALASSIDROMA PELAGICA, Linn.

PLATE CCCCLXI.—MALE AND FEMALE.

In August, 1830, being becalmed on the banks of Newfoundland, I obtained several individuals of this species from a flock composed chiefly of *Thalassidroma Leachii*, and *Th. Wilsoni*. Their smaller size, and the more rapid motions of their wings, rendered them quite conspicuous, and suggested the idea of their being a new species, although a closer inspection shewed them to belong to the present. In their general manners, while feeding, floating on the water, or rambling round the boat in which I went in pursuit of them, they did not differ materially from the other species. Their flight, however, was more hurried and irregular, and none of them uttered any note or cry, even when wounded and captured. I have been assured that this bird breeds on the sandy beaches of Sable Island on the coast of Nova Scotia; but not having had an opportunity of visiting it, or any other breeding place, I here present you with Mr. HEWITSON's observations on this subject.

"In an excursion," says this amiable and enterprising naturalist, "through the Shetland Islands during the present summer, in search of rarities for this work, (the British Oology,) I had the very great satisfaction of seeing and taking many of these most interesting birds alive; they breed in great numbers on several of the islands, principally upon Foula, the north of Hunst, and upon Papa, and Oxnà, two small islands in the Bay of Scalloway; the last of these I visited on the 31st of May in hopes of procuring their eggs (it being the season in which most of the sea-birds begin to lay); but in this I was disappointed; the fishermen, who knew them well by the name of Swallows, assured me that my search would be quite useless, that they had not yet "come up from sea," and so it proved. Sixteen days after this (June 16th and three following days) I was at Foula, but was alike unsuccessful, the birds had arrived at their breeding places, but had not yet begun laying their eggs; numbers of them were sitting in their holes, and were easily caught: one man brought me about a dozen tied up in an old stocking, two of which I kept alive in my room for nearly three days, and derived very great pleasure from their company; during the day they were mostly inactive, and after pacing about the floor for a short time, poking their head

into every hole, they hid themselves between the feet of the table and the wall ; I could not prevail upon them to eat anything, though I tried to tempt them with fish and oil ; their manner of walking is very light and pleasing, and differing from that of every other bird which I have seen ; they carry their body so far forward and so nearly horizontal, as to give them the appearance of being out of equilibrium. In the evening, toward sun-set, they left their hiding-places, and for hours afterwards, never ceased in their endeavours to regain their liberty ; flying round and round the room, or fluttering against the windows ; when flying, their length of wing, and white above the tail, gives them a good deal the appearance of our House-Martin. I went to bed and watched them in their noiseless flight, long ere I fell asleep, but in the morning they had disappeared ; one had fortunately made its escape through a broken pane in the window which a towel should have occupied, the other had fallen into a basin, full of the yolks of eggs which I had been blowing, and was drowned. I regretted much the fate of a being so interesting, by its very remarkable, wandering, solitary, and harmless life. Before leaving Shetland I again visited the island of Oxná, and though so late as the 30th of June, they were only just beginning to lay their eggs. In Foula they breed in the holes in the cliff, at a great height above the sea ; but here under stones which form the beach, at a depth of three or four feet, or more, according to that of the stones ; as they go down to the earth, beneath them, on which to lay their eggs. In walking over the surface, I could hear them, very distinctly, singing in a sort of warbling chatter, a good deal like Swallows when fluttering above our chimneys, but harsher ; and in this way, by listening attentively, was guided to their retreat, and after throwing out stones as large as I could lift on all sides of me, seldom failed in capturing two or three seated on their nests, either under the lowest stone or between two of them. The nests, though of much the same materials as the ground on which they were placed, seem to have been made with care ; they were of small bits of stalks of plants, and pieces of hard dry earth. Like the rest of the genus, the Stormy Petrel lays invariably one egg only. During the day-time they remain within their holes ; and though the fishermen are constantly passing over their heads, (the beach under which they breed being appropriated for the drying of fish,) they are then seldom heard, but toward night become extremely querulous ; and when most other birds are gone to rest, issue forth in great numbers, spreading themselves far over the surface of the sea. The fishermen then meet them very numerously ; and though they have not previously seen one, are sure to be surrounded by them upon throwing pieces of fish overboard."

The egg measures one inch and an eighth in length, six and a half eighths in breadth, is nearly equally rounded at both ends, rather thick-shelled, and

pure white, but generally with numerous minute dots of dull red at the larger end, sometimes forming a circular band.

STORMY PETREL, *Thalassidroma pelagica*, Nutt. Man., vol. ii. p. 327.

LEAST PETREL, *Thalassidroma pelagica*, Aud. Orn. Biog., vol. iv. p. 310.

Male, $5\frac{3}{4}$, $13\frac{1}{2}$.

Not uncommon on the banks of Newfoundland. Not observed to breed on the American coast.

Adult Male.

Bill shorter than the head, slender, compressed towards the end, straight, with the tips curved. Upper mandible with the nostrils forming a tube at the base, beyond which, for a short space, the dorsal line is nearly straight, then suddenly decurved, the sides declinate, the edges sharp, the tip compressed and acute. Lower mandible with the angle rather long, narrow, and pointed, the dorsal line beyond it very slightly concave and decurved, the sides erect, the edges sharp, the tip slightly decurved.

Head of moderate size, roundish, anteriorly narrowed. Neck short. Body rather slender. Feet of moderate length, very slender; tibia bare at its lower part; tarsus very slender, reticulate; hind toe extremely minute, being reduced, as it were, to a slightly decurved claw; anterior toes rather long and extremely slender, obscurely scutellate above, connected by striated webs with concave margins. Claws slender, arched, compressed, acute.

Plumage very soft, blended, the feathers distinct only on the wings, which are very long and narrow; primary quills tapering, but rounded, the second longest, the first three and a half twelfths, the third a twelfth and a half shorter; secondaries short, the outer incurved, obliquely rounded. Tail rather long, broad, slightly rounded, of twelve broad rounded feathers.

Bill and feet black. Iris dark brown. The general colour of the upper parts is greyish-black, with a tinge of brown, and moderately glossed; the lower parts of a sooty-brown; the secondary coverts margined externally with dull greyish-white; the feathers of the rump and the upper tail-coverts white, with the shafts black, the tail-coverts broadly tipped with black.

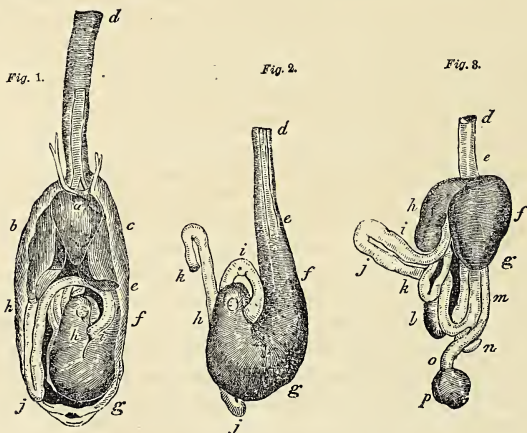
Length to end of tail $5\frac{3}{4}$ inches, to end of claws $5\frac{1}{4}$, to end of wings $6\frac{1}{4}$; extent of wings $13\frac{1}{2}$; wing from flexure $5\frac{1}{8}$; tail $2\frac{1}{8}$; bill above $\frac{4}{8}$; along the edge of lower mandible $\frac{5}{8}$; tarsus $\frac{7}{8}$; middle toe and claw $\frac{7}{8}$; outer toe nearly equal; inner toe and claw $\frac{5}{8}$. Weight $4\frac{1}{2}$ drachms; the individual poor.

Adult Female.

The female resembles the male.

A male bird, from Nova Scotia, examined. The upper mandible internally has a longitudinal median ridge; the palate is convex, with two lateral

ridges. The tongue is $5\frac{1}{2}$ twelfths long, emarginate and serrulate at the base, very much flattened, tapering to a horny point. The heart, Fig. 1, *a*, is of a very elongated narrow conical form, 2 twelfths in length, 4 twelfths in breadth at the base. The lobes of the liver, *b c*, are equal, $6\frac{1}{2}$ twelfths long. The œsophagus, *d e*, is 1 inch 10 twelfths long, of a uniform diameter of $2\frac{1}{4}$ twelfths; behind the liver, it enters as it were a large sac, *f g h*, 9 twelfths of an inch long, which gradually expands to a diameter of 6 twelfths, forming a broad rounded fundus *g*, then curves forwards on the right side, and at *h* terminates in a small gizzard, about 3 twelfths long, and nearly of the same breadth, from the left side of which comes off the intestine. The latter passes forward, curving to the right, behind and in contact with the posterior surfaces of the liver, then forms the duodenal fold, *h j k*, in the usual manner. The intestine, on arriving at the right lobe of the liver, at *k*, receives the biliary duct, curves backward beneath the kidneys, and forms several convolutions, which terminate above the proventriculus. It then becomes much narrower, and passes directly backward, in a straight course to the rectum, which is only 4 twelfths of an inch long. The cœca are oblong, $1\frac{1}{4}$ twelfths in length, and $\frac{1}{2}$ twelfth in diameter. The intestine is $8\frac{1}{2}$ inches long, its diameter diminishing gradually from 2 twelfths to $\frac{3}{4}$ of a twelfth.



In Fig. 2 are represented:—the lower part of the œsophagus, *d e f*; the proventricular sac, *f g h*; the very small gizzard, *h*; the duodenal fold of the intestine, *i j k*. Here the parts are viewed from the left side.

Fig. 3 represents :—the proventricular sac thrust forward, *f g h* ; the gizzard, *h* ; the duodenum, *i j k*, pulled to the right side ; the convolutions of the intestine, *l m*, under the kidneys ; the cœca, *n* ; the rectum, *o* ; and the cloaca, *p*.

The proventricular glands are very numerous, but not so closely placed as is usual, although scattered over a much larger extent, from *e* to *g*, in Fig. 2. Between the termination of the glands and the stomach there is a portion destitute of glandules. The stomach or gizzard has its muscular coat thick, its tendons moderate, its inner surface covered with a rather thick but not very hard epithelium, which is more prolonged on two opposite sides, although in the fundus it is complete.

This curious digestive apparatus agrees very nearly with that described and figured by Sir EVERARD HOME as that of *Alca Alle*. The stomach, it is seen, is excessively large in proportion to the size of the bird ; but why it should be so, and moreover be curved in this manner, is not very obvious. Conjectures are easily made, and might run in this form. This little bird, which wanders over the face of the ocean, subsisting upon garbage, oily and fatty substances, small fishes, and even sea-weeds, requires a large stomach for the reception of its heterogeneous fare, which not being always very nutritious or easily digestible, must be very plentifully intermixed with the gastric juices, and detained a considerable time ; which conditions are accordingly provided for by the very great number and extensive dispersion of the proventricular glandules, and the curve of the organ. Should any hard substances, as crustacea, be introduced, they are pounded by the gizzard ; but as the bird is little addicted to feeding on such substances, that organ is reduced to a very small size.

The aperture of the glottis is $1\frac{1}{2}$ twelfths long. The trachea is 1 inch 7 twelfths in length, wide, flattened, its diameter from 2 twelfths to $1\frac{1}{2}$ twelfths ; its rings unossified, 82 in number. The bronchi are short, wide, of about 12 half rings.

FAMILY XLIV.—ALCINÆ. AUKS.

Bill not longer than the head, much compressed, generally very high, in the species approaching the next family rather slender. Nostrils small, linear, basal, and sub-marginal. Head large, broadly ovate, anteriorly narrowed; neck short and thick; body full, compact, ovate, or somewhat elongated. Feet short, rather stout, placed far behind; tibia bare for a short space; tarsus very short, compressed, anteriorly scutellate; toes three, of moderate length, scutellate, webbed. Claws strong, arched, acute. Plumage dense, blended, soft. Wings small, narrow, pointed. Tail very short. Tongue slender, trigonal; œsophagus very wide, within the thorax extremely dilated; stomach rather large, muscular, with the epithelium dense and longitudinally rugous; intestine long and wide; cœca of moderate size. Trachea simple, with a single pair of inferior laryngeal muscles. Egg generally single.

GENUS I.—MORMON, *Müller*. PUFFIN.

Bill about the length of the head, nearly as high as long, exceedingly compressed, at the base as high as the head, obliquely furrowed on the sides; upper mandible with a horny dotted rim along the basal margin; its dorsal line decurved from the base, the ridge narrow, at the base rounded, the sides rapidly sloped, with three or four curved oblique grooves, the edges sharp, their outline nearly straight, the tip deflected, very narrow, but obtuse; lower mandible with the angle very narrow, and so placed that the base of the bill is inflected beyond the perpendicular, the dorsal line a little convex at first, towards the end ascending, and nearly straight, the sides perpendicular, the edges sharp; the tip very narrow, obliquely truncate; gap-line extending downwards a little beyond the base of the bill, and furnished with a soft corrugated extensile membrane. Nostrils marginal, linear, direct, in the horny part of the bill. Head large, roundish-ovate; neck short and thick; body full and rounded. Feet short, rather stout, placed far behind,



Tufted Puffins
1. Male 2. Female

Drawn from Nature by J. T. Bowen Plated

Light Printed & Col'd by J. T. Bowen Plated

tibia bare for a short space ; tarsus very short, little compressed, anteriorly with a series of small scutella ; toes three, connected by entire webs, the outer and middle toes nearly equal. Claws strong, of moderate length, arched, acute, that of the inner toe much curved. Plumage close, blended, soft. Wings short, narrow, curved, acute ; the first quill longest ; secondaries short and rounded. Tail very short, slightly rounded, of sixteen feathers.

THE TUFTED PUFFIN.

MORMON CIRRHATUS, *Lath.*

PLATE CCCCLXII.—MALE.

The specimen from which I drew the figure of this singular looking bird, was procured at the mouth of the Kennebec river in Maine. It was shot by a fisherman-gunner, while standing on some floating ice, in the winter of 1831-32. No other individual was seen. I could not obtain any information respecting its habits ; but as the bird was in tolerable order, I hope that my figures of it will prove not unacceptable. It was a male, and appeared to be adult. My friend the Prince of MUSIGNANO, mentions this species as being an inhabitant of the seas between North America and Kamtschatka, being, he adds, often found on the western coasts of the United States in winter.

ALCA CIRRHATA, *Lath. Ind. Orn.*, vol. ii. p. 791.

MORMON CIRRHATUS, *Bonap. Syn.*, p. 429.

TUFTED MORMON or PUFFIN, *Nutt. Man.*, vol. ii. p. 539.

TUFTED PUFFIN, *Mormon Cirrhatus*, *Aud. Orn. Biog.*, vol. iii. p. 364.

Male, 15, 22½.

Extremely rare and accidental on the coast of the United States in winter. Common in the Arctic Seas, and on the north-west coast of America.

Adult Male.

Bill about the length of the head, nearly as high as long, extremely compressed, at the base as high as the head, furrowed on the sides. Upper mandible with a horny rim along the basal margin, its dorsal line convex to the

middle, or along the extent of a long, narrow, rounded dorsal prominence, which extends from the base to the first groove, afterwards curved in the fourth of a circle, the ridge narrow, in its basal half rounded, narrower and rather sharp towards the end, the sides slightly convex, and marked with four curved transverse grooves, between the nostril and the tip, the edges rather blunt, nearly straight, until close to the decurved, narrow, obtuse tip. The basal rim is scrobiculate, the rest of the mandible smooth. The nostrils are linear, direct, close to the edge, and near the base. Lower mandible with the angle extremely short and narrow, the dorsal line nearly straight and ascending, the sides slightly concave, without grooves, the ridge narrow but convex, the tip very narrow, obliquely truncate. The gap extends downwards a little beyond the base of the bill, and is furnished with a soft corrugated extensible membrane.

Head large, oblong, anteriorly compressed; eye of moderate size, with the edges of the eyelids bare; neck short and thick; body full and rounded. Feet short, rather stout; tibia bare for a short space above the joint; tarsus very short, anteriorly with a series of small scutella, the rest with small roundish scales. Hind toe wanting; toes of moderate length, rather slender, scutellate above, connected by reticulated entire membranes, the third toe longest, the fourth a little shorter, the second considerably shorter, with a narrow marginal web. Claws strong, of moderate length, compressed, arched, that of the inner toe much curved, of the middle toe with a thin inner edge.

Plumage close, blended, soft, very short on the head, where, however, along a line over and behind the eye, there is on each side a tuft of long, very slender, acute incurved feathers, of a shining hair-like texture. Wings rather short, curved, narrow, acute; primary quills narrow, incurved, first longest, second slightly shorter, the rest rapidly graduated; secondaries very short, small and rounded. Tail very short, slightly rounded, of sixteen narrow, rounded, decurved feathers.

Bill light yellowish-red, the basal rim and the ridge towards the end of the upper mandible bright red, as is the edge of the eyelids. Iris light blue. Feet bright red; webs of a deeper tint; claws black. Sides of the head white; upper part brownish-black; the elongated feathers behind the eye pale yellow. The general colour of the upper parts is brownish-black, glossed with blue, of the lower deep purplish-brown.

Length to end of tail 15 inches, to end of wings 14, to end of claws 14; extent of wings $22\frac{1}{2}$; wing from flexure $8\frac{1}{2}$; tail $2\frac{1}{4}$; bill along the ridge $2\frac{3}{4}$, along the edge of lower mandible $1\frac{1}{2}$; tarsus $1\frac{1}{2}$; middle toe $1\frac{1}{2}$; its claw $\frac{7}{8}$.



Large-billed Puffin
1 Male 2 Female.

Drawn from Nature by J. Audubon, F.R.S.

Published by J. W. & J. P. M. 1844.

THE LARGE-BILLED PUFFIN.

MORMON GLACIALIS, *Leach*.

PLATE CCCCLXIII.—MALE.

Although my learned friend Prince CHARLES BONAPARTE says in his Synopsis of the Birds of the United States, that this species is not uncommon in winter on our coast, I have only once met with it, and even then I rather supposed than was actually certain that the birds observed were Large-billed Puffins. They occurred on the outer side of the Island of Grand Manan, at the entrance of the Bay of Fundy. None were seen by myself or my companions on our way to Labrador, or in that country, so that I am unable to say anything respecting the habits of this remarkable bird. The specimens from which my figures were taken were kindly lent to me by Mr. GOULD of London, whose name must be familiar to you as a successful cultivator of Ornithology.

MORMON GLACIALIS, Bonap. Syn., p. 436.

LARGE-BILLED PUFFIN, Nutt. Man., vol. ii. p. 541.

LARGE-BILLED PUFFIN, *Mormon glacialis*, Aud. Orn. Biog., vol. iii. p. 599.

Male, 13, 24½.

Very rare, and in winter only, off the Bay of Fundy.

Adult Male.

Bill about the length of the head, nearly as high as long, exceedingly compressed, at the base higher than the head, obliquely furrowed on the sides. Upper mandible with a horny rim along the incurved basal margin, its dorsal line irregularly curved from the base, the ridge very narrow but rounded, the sides rapidly sloping, and marked with three curved oblique grooves, the edges strong, rather sharp, their outline nearly straight, the tip deflected, very narrow, but obtuse. Between the basal rim and the first groove is a triangular flat space, in the lower part of which, close to the edge of the mandible, is the linear direct nostril. Lower mandible with the angle narrow, and so placed that the base is inflected much beyond the perpendicular, the dorsal line irregularly curved, towards the end ascending and nearly straight, the ridge narrow, broader about the middle, the sides

nearly flat and grooved, the edges strong, the tip very narrow. The gap extends downwards a little beyond the base of the bill, and is furnished with a soft corrugated extensible membrane.

Head large, oblong, anteriorly compressed. Eyes of moderate size, with bare orbits; over the upper eyelid an oblong, tapering, horny body directed upwards and backwards, on the lower a linear body of a similar nature over its whole length. Neck short and thick. Body full and rounded. Feet short, rather stout; tibia bare for a short space above the joint. Tarsus very short, little compressed, anteriorly for three-fourths of its length with a series of small scutella, the rest with reticular angular scales. Hind toe wanting, toes rather long and slender, scutellate above, connected by reticulated entire membranes, the third and fourth toes about equal, the second considerably shorter, with a narrow marginal web. Claws strong, of moderate length, compressed, arched, that of the inner toe much curved and acute.

Plumage close, blended, soft, very short on the head. Wings curved, short, narrow, acute. Primary quills tapering, incurved, the first longest, the second a little shorter, the rest regularly graduated; secondaries very short and rounded. Tail very short, much rounded, of sixteen rounded feathers.

Bill bright orange-red, soft edges of mouth gamboge. Edges of eyelids orange-red; the iris and horny appendages light blue. Feet orange-red, with the webs paler, the claws yellowish-brown. The sides of the head and the lower parts in general, white; upper part of the head light brownish-grey tinged with lilac; a broad collar extending to the lower mandible, of a dark greyish-brown tint below, and gradually passing into the colour of the upper parts, which is brownish-black, glossed with blue; primary quills and their coverts blackish-brown, very slightly margined with paler.

Length to end of tail 13 inches, to end of claws 14, to end of wings $12\frac{1}{2}$; extent of wings $24\frac{1}{2}$; bill along the ridge $2\frac{3}{4}$, along the edge of lower mandible $1\frac{3}{8}$; depth of bill at the base $1\frac{1}{2}$, its greatest diameter $\frac{5}{8}$; tarsus $1\frac{3}{8}$; middle toe $1\frac{7}{8}$, its claw $\frac{1}{2}$.

Adult Female.

The female is precisely similar to the male.



Common or Arctic Puffin.
1. Male 2. Female.

Drawn from Nature by J. J. Audubon F.R.S.

Lith. Printed & Col'd by T. Bowen Philad.

COMMON OR ARCTIC PUFFIN.

MORMON ARCTICUS, *Linn.*

PLATE CCCCLIV.—MALE AND FEMALE.

The Sea Parrot, as this bird is usually called on the eastern coasts of the United States, as well as by the fishermen of Newfoundland and Labrador, sometimes proceeds as far south as the entrance of the river Savannah in Georgia, where I saw a good number of them in the winter of 1831-32. It is by no means, however, common with this species to extend its southward migrations so far, and I suspect it does so only in very severe weather. It is never plentiful off Long Island, but becomes more abundant the farther you proceed eastward, until you reach the entrance to the Bay of Fundy, where it is quite common, and on the islands of which many breed, although not one perhaps now for a hundred that bred there twenty years ago. Those which proceed farther north leave the United States about the middle of April, and move along the coast, none ever crossing over the land to any extent. On my voyage to Labrador I observed Puffins every day; but although we reached that country in the early part of June, none had then begun to breed. As we approached the shores of that inhospitable land, we every now and then saw them around the vessel, now floating on the swelling wave, now disappearing under the bow, diving with the swiftness of thought, and sometimes rising on wing and flying swiftly, but low, over the sea. The nearer we approached the coast the more abundant did we find the Puffins, and sometimes they were so numerous as actually to cover the water to the extent of half an acre or more. At first we paid little attention to them, but as soon as I became aware that they had begun to breed, I commenced an investigation, of which I now proceed to lay before you the result.

The first breeding place which I and my party visited was a small island, a few acres in extent, and pleasant to the eye, on account of the thick growth of green grass with which it was covered. The shores were exceedingly rugged, the sea ran high, and it required all the good management of our captain to effect a safe landing, which, however, was at length accomplished at a propitious moment, when, borne on the summit of a great wave, we reached the first rocks, leaped out in an instant, and held our boat, while

the angry waters rolled back and left it on the land. After securing the boat, we reached with a few steps the green sward, and directly before us found abundance of Puffins. Some already alarmed flew past us with the speed of an arrow, others stood erect at the entrance of their burrows, while some more timid withdrew within their holes as we advanced towards them. In the course of half an hour we obtained a good number. The poor things seemed not at all aware of the effect of guns, for they would fly straight towards us as often as in any other direction ; but after awhile they became more knowing, and avoided us with more care. We procured some eggs, and as no young ones were yet to be found, we went off satisfied. The soil was so light, and so easily dug, that many of the burrows extended to the depth of five or six feet, although not more than a few inches below the surface, and some of the poor birds underwent a temporary imprisonment in consequence of the ground giving way under our weight. The whole island was perforated like a rabbit-warren, and every hole had its entrance placed due south, a circumstance which allowed the birds to emerge in our sight almost all at once, presenting a spectacle highly gratifying to us all. Our visit to this island took place on the 28th of June, 1833.

On the 12th of August, our Captain, my friends GEORGE SHATTUCK and WILLIAM INGALLS, with four sailors, and another boat in company, went on a visit to "Perroket Island," distant about two miles from the harbour of Bras d'Or. The place is known to all the cod-fishers, and is celebrated for the number of Puffins that annually breed there. As we rowed towards it, although we found the water literally covered with thousands of these birds, the number that flew over and around the green island seemed much greater, insomuch that one might have imagined half the Puffins in the world had assembled there. This far-famed isle is of considerable extent, its shores are guarded by numberless blocks of rock, and within a few yards of it the water is several fathoms in depth. The ground rises in the form of an amphitheatre to the height of about seventy feet, the greatest length being from north to south, and its southern extremity fronting the Strait of Belleisle. For every burrow in the island previously visited by us there seemed to be a hundred here, on every crag or stone stood a Puffin, at the entrance of each hole another, and yet the sea was covered and the air filled by them. I had two double-barrelled guns and two sailors to assist me ; and I shot for one hour by my watch, always firing at a single bird on wing. How many Puffins I killed in that time I take the liberty of leaving you to guess.

The burrows were all inhabited by young birds, of different ages and sizes, and clouds of Puffins flew over our heads, each individual holding a "lint" by the head. This fish, which measures four or five inches in length,

and is of a very slender form, with a beautiful silvery hue, existed in vast shoals in the deep water around the island. The speed with which the birds flew made the fish incline by the side of their neck. While flying the Puffins emitted a loud croaking noise, but they never dropped the fish, and many of them, when brought down by a shot, still held their prey fast. I observed with concern the extraordinary affection manifested by these birds towards each other ; for whenever one fell dead or wounded on the water, its mate or a stranger immediately alighted by its side, swam around it, pushed it with its bill as if to urge it to fly or dive, and seldom would leave it until an oar was raised to knock it on the head, when at last, aware of the danger, it would plunge below in an instant. Those which fell wounded immediately ran with speed to some hole, and dived into it, on which no further effort was made to secure them. Those which happened to be caught alive in the hand bit most severely, and scratched with their claws at such a rate that we were glad to let them escape. The burrows here communicated in various ways with each other, so that the whole island was perforated as if by a multitude of subterranean labyrinths, over which one could not run without the risk of falling at almost every step. The voices of the young sounded beneath our feet like voices from the grave, and the stench was extremely disagreeable, so that as soon as our boats were filled with birds we were glad to get away.

During the whole of our visit, the birds never left the place, but constantly attended to their avocations. Here one would rise from beneath our feet, there, within a few yards of us, another would alight with a fish, and dive into its burrow, or feed the young that stood waiting at the entrance. The young birds were far from being friendly towards each other, and those which we carried with us kept continually fighting so long as we kept them alive. They used their yet extremely small and slender bills with great courage and pertinacity, and their cries resembled the wailings of young whelps. The smaller individuals were fed by the parents by regurgitation, or received little pieces of fish which were placed in their mouths ; the larger picked up the fish that were dropped before them ; but almost all of them seemed to crawl to the entrance of the holes for the purpose of being fed. In all the burrows that communicated with others, a round place was scooped out on one side of the avenue, in the form of an oven ; while in those which were single, this oven-like place was found at the end, and was larger than the corridor. All the passages were flattish above, and rounded beneath, as well as on the sides. In many instances we found two birds sitting each on its egg in the same hole.

The Puffin never lays more than one egg, unless the first may have been destroyed or taken away ; nor does it raise more than a single young one in

the season. The time of incubation is probably from twenty-five to twenty-eight days, although I have not been able to ascertain the precise period. Both birds work in digging the hole, using their bills and feet; they also sit alternately on their egg, although the female engages more industriously in this occupation, while the male labours harder at the burrow. The egg is pure white when first deposited, but soon becomes soiled by the earth, as no nest is formed for its reception. It generally measures two and a half inches by one and three-fourths, but varies in size according to the age of the bird, as well as in shape, some being considerably more rounded at the smaller end than others. When boiled, the white is of a livid-blue colour. The captain and myself were the only persons of our party who tried to eat some. The eggs are certainly very bad, and are never collected by "The Eggers." The flesh of the birds is very dark, tough, and so fishy as to be eatable only in cases of great want. Two Italians who had come to Labrador to purchase cod-fish, and were short of provisions, fed upon Puffins daily, to the great amusement of our party. The fishermen at times, when bait is scarce along the coast, destroy a great number of these birds, which they skin like rabbits, and then cut the flesh into slices.

The flight of the Puffin is firm, generally direct, now and then pretty well sustained. It is able to rise at once from the water or the land, although at times it runs on both before taking to wing. This depends much on necessity, for if pushed it flies at once from the ground, or plunges under the surface of the water. There they swim, with the wings partially opened, at a small depth, passing along in the manner of Divers; and by this means they catch their prey; but at other times they dive to the bottom, many fathoms deep, for shell-fish and other objects.

During the love season, the males chase each other in the air, on the water, or beneath its surface, with so much quickness, as to resemble the ricochets of a cannon-ball. Having kept several for about a week, I threw them overboard in the harbour where we were at anchor, and where the water was beautifully clear. On leaving my gloved hand, they plunged through the air, entered the water, and swam off, assisting themselves by their wings, to the distance of from fifty to a hundred yards. On coming up, they washed their plumage for a long time, and then dived in search of food. While on board, they ran about from the dark towards the light, keeping themselves erect, and moving with great briskness, until at times close to my feet, when they would watch my motions like Hawks, and if I happened to look towards them, would instantly make for some hiding-place. They fed freely and were agreeable pets, only that they emitted an unpleasant grunting noise, and ran about incessantly during the night, when each footstep could be counted. When on rocky shores, or islands with

large stones, I observed that the Puffins often flew from one crag or stone to another, alighting with ease, and then standing erect.

The young, while yet covered with down, are black, with a white patch on the belly. Their bills do not acquire much of the form which they ultimately have for several weeks; nor do they assume their perfect shape for years. I have examined many hundred individuals, among which I have found great differences in the size and form of the bill. In fact, the existence of this diversity has induced many persons to think that we have several species of Puffin on our coasts; but, after having examined many specimens in Europe, I am decidedly of opinion that this species is the same that occurs in both continents, and that we have only one more at all common on our eastern coasts. The sexes differ in no perceptible degree, only that the males are somewhat larger. When two years old they may be considered of their full size, although the bill continues to grow and acquires furrows, until it becomes as you see it in the plate.

MORMON ARCTICUS, Bonap. Syn., p. 430.

PUFFIN or COULTERNEE, Nutt. Man., vol. ii. p. 542.

PUFFIN, *Mormon arcticus*, Aud. Orn. Biog., vol. iii. p. 105.

Male 11½, 23.

Ranges southward along the coast in winter, at times as far as Georgia. Less rare from Long Island eastward, and becomes plentiful in the Bay of Fundy. Breeds in vast numbers in burrows, on the islands off Labrador.

Adult Male in summer.

Bill about the length of the head, nearly as high as long, exceedingly compressed, at the base as high as the head, obliquely furrowed on the sides. Upper mandible with a horny rim along the basal margin, its dorsal line curved from the base, the ridge very narrow but rounded, the sides rapidly sloped, and marked with three curved oblique grooves, the edges obtuse, their outline nearly straight, the tip deflected, very narrow but obtuse. Between the basal rim and the first groove is a triangular flat space analogous to the nasal groove, in the lower part of which, close to the edge of the bill, is the linear direct nostril. Lower mandible with the angle very narrow, and so placed that the base of the bill is inflected beyond the perpendicular, the dorsal line a little convex at first, towards the end straight, the ridge narrow, broader about the middle, the sides nearly flat, grooved and ridged as in the upper, the edges strong, the tip very narrow. The gap extends downwards a little beyond the base of the bill, and is furnished with a soft corrugated extensible membrane.

Head large, oblong, anteriorly compressed. Eye rather small, with bare

orbits; over the upper eyelid an oblong, nearly erect, horny body, along the lower a more elongated one of the same nature. Neck short and thick, body full and rounded. Wings short. Feet short, rather stout; tibia bare for a short way above the joint. Tarsus very short, little compressed, anteriorly with a series of small scutella, the rest with reticular angular scales. Hind toe wanting. Toes of moderate length, rather slender, scutellate above, connected by reticulated entire membranes which project a little, the third and fourth toes about equal, the second considerably shorter, with a narrow marginal web. Claws strong, of moderate length, compressed, slightly arched; that of the inner toe much curved and acute.

Plumage close, blended, soft, very short on the head. Wings curved, short, narrow, acute. Primary quills narrow, incurved, first longest, second a little shorter, the rest rapidly graduated. Secondaries very short, small and rounded. Tail very short, slightly rounded, of sixteen narrow rounded feathers.

Bill with the basal rim and first ridge of upper mandible dull yellow, the intervening space greyish-blue, basal margin of lower bright red, first ridge and intervening space as in the upper, the rest bright red (carmine tinged with vermilion); membrane at the base of the gap gamboge-yellow, inside of mouth and tongue yellow. Edge of eyelids vermilion, horny appendages of eyelids greyish-blue. Iris light blue. Feet vermilion, claws black. Throat and sides of the head white, that colour extending over the eye, and passing in a narrow line behind the occiput. Upper part of the head blackish-grey, tinged with olive, paler anteriorly. The middle of the neck all round, and all the upper parts of the body, deep black, with blue reflections, the quills tinged with brown. The whole under surface white, except the upper part of the sides, which are dusky.

Length to end of tail $11\frac{3}{4}$ inches, to end of claws $13\frac{1}{2}$, extent of wings 23; bill along the back 2, along the edge of upper mandible $1\frac{1}{4}$; depth of bill at base $1\frac{1}{8}$, its greatest diameter $\frac{3}{8}$; tarsus 1, middle toe $1\frac{1}{2}$, its claw $\frac{1}{2}$. Weight $\frac{3}{4}$ lb.

Female.

The female is precisely similar to the male, but of somewhat smaller size.

GENUS II.—ALCA, *Linn.* AUK.

Bill as long as the head, feathered as far as the nostrils, beyond which it is very high, exceedingly compressed, and obliquely furrowed on the sides; upper mandible with the dorsal line decurved, the ridge extremely narrow, the sides nearly flat, the nasal groove very large, and feathered, with its lower margin very narrow, and convex, the edges sharp and inflected, the tip decurved, very narrow, but obtuse; lower mandible with the angle very narrow, and having a horny triangular appendage, the sides at first extremely narrow, towards the end erect and flat, the edges inflected, the dorsal outline concave, the tip decurved. Nostrils medial marginal, linear, short, concealed by the feathers. Head large, ovate; neck short and thick; body full, rather depressed. Feet placed far behind, short, stout; tibia bare for a short space; tarsus very short, compressed, anteriorly scutellate; hind toe wanting; anterior toes of moderate length, rather slender, scutellate, webbed, the outer slightly longer than the middle. Claws rather small, arched, compressed, obtuse. Plumage close, blended, very soft. Wings very short, narrow, acute, first quill longest. Tail short, tapering, of twelve or fourteen feathers.

G R E A T A U K .

ALCA IMPENNIS, Linn.

PLATE CCCCLXV.—ADULT.

The only authentic account of the occurrence of this bird on our coast that I possess, was obtained from Mr. HENRY HAVELL, brother of my Engraver, who, when on his passage from New York to England, hooked a Great Auk on the banks of Newfoundland, in extremely boisterous weather. On being hauled on board, it was left at liberty on the deck. It walked very awkwardly, often tumbling over, bit every one within reach of its powerful bill, and refused food of all kinds. After continuing several days on board, it was restored to its proper element.

When I was in Labrador, many of the fishermen assured me that the "Penguin," as they name this bird, breeds on a low rocky island to the south-east of Newfoundland, where they destroy great numbers of the young for bait; but as this intelligence came to me when the season was too far advanced, I had no opportunity of ascertaining its accuracy. In Newfoundland, however, I received similar information from several individuals. An old gunner residing on Chelsea Beach, near Boston, told me that he well remembered the time when the Penguins were plentiful about Nahant and some other islands in the bay.

The egg is very large, measuring five inches in length, and three in its greatest breadth. In form it resembles that of the Common Guillemot; the shell is thick and rather rough to the touch; its colour yellowish-white, with long irregular lines and blotches of brownish-black, more numerous at the larger end.

GREAT AUK, *Alca impennis*, Nutt. Man., vol. ii. p. 553.

GREAT AUK, *Alca impennis*, Aud. Orn. Biog., vol. iv. p. 316.

Adult, 29, 27 $\frac{1}{4}$

Rare and accidental on the banks of Newfoundland; said to breed on a rock near that island.

Adult in summer.

Bill as long as the head, feathered as far as the nostrils, beyond which it is



Great Auklet

Adult

Drawn from Nature by J. J. Audubon, F.R.S.

Lab. Printed & Col'd by J. T. Bowen, Philad.

very high, exceedingly compressed, tapering, and slightly declinate. Upper mandible with the dorsal line straight for an inch and a quarter, then declinate and decurved to the end, the ridge very narrow, broader at the base; the sides nearly flat, with a basal ridge succeeded by a deep groove, then a large flat space, succeeded by eight oblique curved ridges, the edges sharp toward the end, the tip decurved and obtuse. Nostrils marginal, linear, short, pervious, but concealed by the feathers. Lower mandible with the angle long, the sides extremely narrow and linear for half their length, the horny part not being extended over the bone, which is covered with feathers, afterwards deep and compressed, with the dorsal line at first convex, then ascending and concave to the end, the sides flat, with about ten transverse ridges, the edges sharp, the tip deflected.

Head large, oblong, anteriorly narrowed. Eyes rather small. Neck short and thick. Body compact and full. Wings extremely small, but perfectly formed. Feet placed far behind, short, very strong; tarsus short, compressed, anteriorly scutellate, laterally covered with angular scales, those on the hind part very small. Hind toe wanting; third toe longest, outer nearly as long, inner much shorter, lateral toes marginate, all with numerous scutella and several rows of angular scales above, and connected by reticulated webs. Claws rather small, narrow, arched, convex above, and obtuse.

Plumage close, blended, very soft, on the head and neck short and velvety. Wings diminutive, much pointed; the primaries tapering to an acute point, the first longest, the rest rapidly graduated, their coverts long; secondaries short and broad, scarcely longer than their coverts. Tail short, pointed, of *fourteen* feathers.

Bill black, with the grooves between the transverse ridges white. Iris hazel. Feet and claws black. Fore part of the neck below, and all the lower parts white, of which colour also is a large oblong patch before each eye and the tips of the secondary quills, the rest black; the throat and sides of the neck tinged with chocolate-brown, the wings with greyish-brown, the head, hind neck, and back glossed with olive-green.

Length to end of tail 29 inches, to end of wings $23\frac{3}{4}$, to end of claws $31\frac{1}{4}$, to carpal joint $18\frac{1}{2}$; extent of wings $27\frac{1}{4}$; wing from flexure $7\frac{1}{8}$; tail $2\frac{7}{8}$; bill along the ridge $3\frac{1}{2}$, along the edge of lower mandible $4\frac{1}{2}$; greatest depth of upper mandible 1, depth of lower $\frac{3}{8}$; width of gap $1\frac{7}{8}$; tarsus 2; middle toe $2\frac{3}{8}$, its claw $\frac{5}{8}$; outer toe $2\frac{5}{8}$, its claw $\frac{9}{8}$; inner toe $2\frac{1}{8}$, its claw $\frac{1}{8}$.

THE RAZOR-BILLED AUK.

ALCA TORDA, *Linn.*

PLATE CCCCLXVI.—MALE AND FEMALE.

A few birds of this species occasionally go as far south as New York during winter ; but beyond that parallel I never met with one. From Boston eastward many are seen, and some breed on the Seal Islands off the entrance of the Bay of Fundy. These Auks generally arrive on our Atlantic coast about the beginning of November, and return northward to breed about the middle of April. During their stay with us, they are generally seen singly, and at a greater distance from the shores than the Guillemots or Puffins ; and I have no doubt that they are able to procure shell-fish at greater depths than these birds. I have observed them fishing on banks where the bottom was fifteen or eighteen fathoms from the surface, and, from the length of time that they remained under water, felt no doubt that they dived to it. On my voyage round Nova Scotia and across the Gulf of St. Lawrence, we saw some of them constantly. Some had eggs on the Magdeleine Islands, where, as the inhabitants informed us, these birds arrive about the middle of April, when the Gulf is still covered with ice. As we proceeded towards Labrador, they passed us every now and then in long files, flying at the height of a few yards from the water, in a rather undulating manner, with a constant beat of the wings, often within a musket-shot of our vessel, and sometimes moving round us and coming so close as to induce us to believe that they had a wish to alight. The thermometer indicated 44°. The sight of these files of birds passing swiftly by was extremely pleasing ; each bird would alternately turn towards us the pure white of its lower parts, and again the jetty black of the upper. As I expected ere many days should pass to have the gratification of inspecting their breeding-grounds, I experienced great delight in observing them as they sped their flight toward the north.

After we had landed, we every day procured Auks, notwithstanding their shyness, which exceeded that of almost all the other sea-birds. The fishermen having given me an account of their principal breeding places, the Ripley proceeded toward them apace. One fair afternoon we came in view of the renowned Harbour of Whapati Guan, and already saw its curious



Razor-billed Auk

1 Male 2 Female

Drawn from Nature by J.J. Audubon F.R.S.E.L.S.

Lith. Printed & Col'd by J. T. Bowen, Philad.^a

beacon, which being in form like a huge mounted cannon placed on the elevated crest of a great rock, produced a most striking effect. We knew that the harbour was within the stupendous wall of rock before us, but our pilot, either from fear or want of knowledge, refused to guide us to it, and our captain, leaving the vessel in charge of the mate, was obliged to go off in a boat, to see if he could find a passage. He was absent more than an hour. The Ripley stood off and on, the yards were manned on the look-out, the sea was smooth and its waters as clear as crystal, but the swell rose to a prodigious height as it passed sluggishly over the great rocks that seemed to line the shallows over which we floated. We were under no apprehension of personal danger, however, for we had several boats and a very efficient crew; and besides, the shores were within cannon shot; but the idea of losing our gallant bark and all our materials on so dismal a coast haunted my mind, and at times those of my companions. From the tops our sailors called out "Quite shallow here, sir." Up went the helm, and round swung the Ripley like a duck taken by surprise. Then suddenly near another shoal we passed, and were careful to keep a sharp look-out until our commander came up.

Springing upon the deck, and turning his quid rapidly from side to side, he called out, "All hands square the yards," and whispered to me, "All's safe, my good sir." The schooner advanced towards the huge barrier, merrily as a fair maiden to meet her beloved; now she doubles a sharp cape, forces her way through a narrow pass; and lo! before you opens the noble harbour of Whapati Guan. All around was calm and solemn; the waters were smooth as glass, the sails fell against the masts, but the impetus which the vessel had received urged her along. The lead was heaved at every yard, and in a few minutes the anchor was dropped.

Reader, I wish you had been there, that you might yourself describe the wild scene that presented itself to our admiring gaze. We were separated from the rolling swell of the Gulf of St. Lawrence by an immense wall of rock. Far away toward the east and north, rugged mounds innumerable rose one above another. Multitudes of frightened Cormorants croaked loudly as they passed us in the air, and at a distance flew divers Guillemots and Auks. The mossy beds around us shone with a brilliant verdure, the Lark piped its sweet notes on high, and thousands of young codfish leaped along the surface of the deep cove as if with joy. Such a harbour I had never seen before; such another, it is probable, I may never see again; the noblest fleet that ever ploughed the ocean might anchor in it in safety. To augment our pleasures, our captain some days after piloted the Gulnare into it. But, you will say, "Where are the Auks, we have lost sight of them

entirely." Never fear, good reader, we are in a delightful harbour, and anon you shall hear of them.

Winding up the basin toward the north-east, Captain Emery, myself, and some sailors, all well armed, proceeded one day along the high and precipitous shores to a distance of about four miles, and at last reached the desired spot. We landed on a small rugged island. Our men were provided with long poles, having hooks at their extremities. These sticks were introduced into the deep and narrow fissures, from which we carefully drew the birds and eggs. One place, in particular, was full of birds; it was an horizontal fissure, about two feet in height, and thirty or forty yards in depth. We crawled slowly into it, and as the birds affrighted flew hurriedly past us by hundreds, many of their eggs were smashed. The farther we advanced, the more dismal did the cries of the birds sound in our ears. Many of them despairing of effecting their escape, crept into the surrounding recesses. Having collected as many of them and their eggs as we could, we returned, and glad were we once more to breathe the fresh air. No sooner were we out than the cracks of the sailors' guns echoed among the rocks. Rare fun to the tars, in fact, was every such trip, and, when we joined them, they had a pile of Auks on the rocks near them. The birds flew directly towards the muzzles of the guns, as readily as in any other course, and therefore it needed little dexterity to shoot them.

When the Auks deposit their eggs along with the Guillemots, which they sometimes do, they drop them in spots from which the water can escape without injuring them; but when they breed in deep fissures, which is more frequently the case, many of them lie close together, and the eggs are deposited on small beds of pebbles or broken stones raised a couple of inches or more to let the water pass beneath them. Call this instinct if you will:—I really do not much care; but you must permit me to admire the wonderful arrangements of that Nature from which they have received so much useful knowledge. When they lay their eggs in such an horizontal cavern as that which I have mentioned above, you find them scattered at the distance of a few inches from each other; and there, as well as in the fissures, they sit flat upon them like Ducks, for example, whereas on an exposed rock each bird stands almost upright upon its egg. Another thing quite as curious, which I observed, is that while in exposed situations the Auk seldom lays more than one egg, yet in places of greater security I have in many instances found two under a single bird. This may perhaps astonish you, but I really cannot help it.

The Razor-billed Auks begin to drop their eggs in the beginning of May. In July we found numerous young ones, although yet small. Their bill then scarcely exhibited the form which it ultimately assumes. They were

covered with down, had a lisping note, but fed freely on shrimps and small bits of fish, the food with which their parents supply them. They were very friendly towards each other, differing greatly in this respect from the young Puffins, which were continually quarrelling. They stood almost upright. Whenever a finger was placed within their reach, they instantly seized it, and already evinced the desire to bite severely so cordially manifested by the old birds of this species, which in fact will hang to your hand until choked rather than let go their hold. The latter when wounded threw themselves on their back, in the manner of Hawks, and scratched fiercely with their claws. They walked and ran on the rocks with considerable ease and celerity, taking to wing, however, as soon as possible. When thus disturbed while breeding, they fly round the spot many times before they alight again. Sometimes a whole flock will alight on the water at some distance, to watch your departure, before they will venture to return.

This bird lays one or two eggs, according to the nature of the place. The eggs measure at an average three inches and one-eighth, by two and one-eighth, and are generally pure white greatly blotched with dark reddish-brown or black, the spots generally forming a circle towards the larger end. They differ considerably from those of the Common and the Thick-billed Guillemots, being less blunted at the smaller end. The eggs afford excellent eating; the yolk is of a pale orange colour, the white pale blue. The eggers collect but few of the eggs of this bird, they being more difficult to be obtained than those of the Guillemot, of which they take vast numbers every season.

The food of the Razor-billed Auk consists of shrimps, various other marine animals, and small fishes, as well as roe. Their flesh is by the fishers considered good, and I found it tolerable, when well stewed, although it is dark and therefore not prepossessing. The birds are two years in acquiring the full size and form of their bill, and, when full grown, they weighed about a pound and a half. The stomach is an oblong sac, the lower part of which is rather muscular, and answers the purpose of a gizzard. In many I found scales, remnants of fish, and pieces of shells. The intestines were upwards of three feet in length.

Immediately after the breeding season, these birds drop their quills, and are quite unable to fly until the beginning of October, when they all leave their breeding-grounds for the sea, and move southward. The young at this period scarcely show the white streak between the bill and the eye; their cheeks, like those of the old birds at this time, and the fore part of the neck, are dingy white, and remain so until the following spring, when the only difference between the young and the old is, that the former have the bill

smaller and less furrowed, and the head more brown. The back, tail, and lower parts do not seem to undergo any material change

ALCA TORDA, Bonap. Syn., p. 431.

RAZOR-BILL, *Alca Torda*, Nutt. Man., vol. ii. p. 547.

RAZOR-BILLED AUK, *Alca Torda*, Aud. Orn. Biog., vol. iii. p. 112; vol. v. p. 628.

Male, 17, 29½.

Rare on the eastern coast of the United States, and only during winter. Breeds in great numbers on the Gannet Rock in the Gulf of St. Lawrence, on the shores of Newfoundland, and the western coast of Labrador, chiefly in the fissures of rocks.

Adult Male in summer.

Bill shorter than the head, feathered as far as the nostrils, beyond which it is very high, exceedingly compressed, and obliquely furrowed on the sides. Upper mandible with the dorsal line curved so as to form the third of a circle, the ridge extremely narrow but rounded, the sides nearly flat, with five grooves, the one next the base deeper and more narrow, the edges inflected and sharp, the tip decurved and obtuse. Nostrils medial, marginal, linear, short, pervious, but concealed by the feathers. Lower mandible with the angle very narrow, and having a horny triangular appendage, the base at first horizontal and extremely narrow, then sloping forwards and rounded, the dorsal outline rounded, towards the end concave, the sides slightly concave, the edges inflected, the tip decurved.

Head large, oblong, anteriorly narrowed. Eyes small. Neck short and strong. Body full, rather depressed. Wings small. Feet placed far behind, short, rather strong; tibia bare a short way above the joint; tarsus very short, compressed, anteriorly scutellate, laterally covered with reticulated angular scales, posteriorly granulate. Hind toe wanting; toes of moderate length, rather slender, scutellate above, connected by reticulated entire membranes, the inner toe having also a projecting margin; outer toe slightly longer than middle one; inner considerably shorter. Claws rather small, arched, compressed, obtuse.

Plumage close, blended, very soft, on the head very short and velvety. Wings short, curved, narrow, acute. Primary quills narrow, incurved, acute, first longest, second slightly shorter, the rest rapidly graduated; secondary quills very short, obliquely rounded. Tail short, tapering, of twelve narrow, pointed feathers.

Bill black, with a white line across each mandible; inside of the mouth gamboge-yellow. Iris deep hazel. Feet black. Fore part of neck below, and all the lower parts, white; the rest black, the head, hind neck, and back

glossed with olive-green, the throat and sides of the neck tinged with chocolate, the wings with brown, the tips of the secondary quills, and a narrow line from the bill to the eye, white.

Length to the end of tail 17 inches, to the end of claws $17\frac{3}{4}$; extent of wings $29\frac{1}{2}$; wing from flexure $8\frac{1}{2}$; tail 4; bill along the ridge $1\frac{7}{8}$, along the edge $2\frac{1}{2}$, its greatest depth $\frac{1}{2}$; tarsus $1\frac{2}{3}$; middle toe $1\frac{6}{8}$, its claw $\frac{5}{12}$. Weight $1\frac{1}{2}$ pounds.

Adult Female in summer.

The female is precisely similar to the male.

The Young in their winter plumage have the colouring distributed as in the old birds, but with the black duller, the wings more brown, the throat and sides of the head mottled with white, the white line from the bill to the eye existing, but the bill much smaller, without furrows or a white line.

The Old Birds in winter have the throat and sides of the neck mottled as described above; but in other respects their colours are the same as in summer.

The gullet wide, dilated towards the lower extremity, its mucous coat longitudinally corrugated; the proventriculus very wide and glandular; the stomach rather small, oblong, muscular, with an inner, longitudinally corrugated and horny cuticular coat. Pylorus very small; intestine near its commencement $\frac{1}{2}$ of an inch in diameter, gradually contracted to the cœca, where it is $\frac{2}{3}$; cœca half an inch long, tapering. The length of the gullet and stomach together is 8, that of the intestines 41 inches.

On the palate are several series of reversed papillæ, and two longitudinal papillate ridges; on its anterior part are five prominent lines; the posterior aperture of the nares linear, 1 inch in length; width of mouth 11 twelfths. Tongue $1\frac{1}{4}$ inches long, fleshy, slender in its whole length, trigonal, flat above, with a median groove, and tapering to a very thin horny point. Œsophagus $8\frac{1}{2}$ inches long, its width along the neck 10 twelfths, but within the thorax it forms an enormous sac $3\frac{1}{2}$ inches long, 1 inch 11 twelfths in breadth; the proventricular glands very numerous, forming a complete belt $3\frac{1}{4}$ inches in length, and occupying almost the whole of the sac above mentioned. Stomach very small, 10 twelfths long, 9 twelfths in breadth; its muscular coat thin, the tendons round, and about 5 twelfths in breadth; the epithelium thin, dense, and longitudinally rugous. Intestine 53 inches long, its average width 5 twelfths; the cœca 9 twelfths long, $1\frac{1}{2}$ twelfths in breadth, 2 inches 1 twelfth distant from the extremity; cloaca globular, and about 1 inch in diameter.

Trachea 5 inches long, from $4\frac{1}{2}$ twelfths to 3 twelfths in width, a little flattened; its rings 95, unossified. Bronchi very wide, of 18 half rings. Cleido-tracheal muscles, lateral muscles, sterno-tracheal slips, and a single pair of inferior laryngeal muscles.

GENUS III.—PHALERIS, *Temm.* PHALERIS.

Bill shorter than the head, stout, straightish, broad at the base, compressed toward the end; upper mandible with a prominent basal rim as in the Puffin, its dorsal line convex and declinate, the sides sloping, the edges sharp, with a deep sinus close to the narrow, declinate, blunt tip; lower mandible with the angle rather long and wide, the dorsal line ascending and a little convex, the sides sloping outwards, the edges sharp, the tip ascending, obliquely truncate. Nostrils linear-oblong, direct, near the margin, in the horny part of the bill. Head rather large, ovate; neck short and thick; body full and compact. Feet short, placed far behind; tibia bare below; tarsus very short, much compressed, anteriorly scutellate; toes three, connected by emarginate webs; middle and outer toes of the same length. Claws rather stout, moderately arched, compressed, rather obtuse. Plumage dense, blended, soft. Wings of moderate length, very narrow, pointed. Tail very short, rounded, of fourteen feathers.

CURLED-CRESTED PHALERIS.
PHALERIS CRISTATELLA, *Gmel.*

PLATE CCCCLXVII.—ADULT.

My drawing of this singular bird, which belongs to the north-west coast, was taken from a specimen in the Museum of the Zoological Society. Since then I procured one for description, from Mr. LEADBEATER.

ALCA CRISTATELLA, *Gmel. Syst. Nat.*, vol. i. p. 552.CURLED-CRESTED PHALERIS, *Phaleris cristatella*, *Aud. Orn. Biog.*, vol. v. p. 102.



Curled-crested Phalarope.
Adult.

Drawn from Nature by J. J. Audubon, F.R.S. & F.L.S.

Printed & Col'd by J. T. Bowen Philad^a

Adult, 10, wing, 6½.

North-west coast of America.

Bill shorter than the head, stout, straightish, broad at the base, compressed toward the end. Upper mandible with a prominent basal rim as in the Puffins, its dorsal outline convex and declinate, the sides sloping, a prominent line descending from the base of the ridge to the anterior part of the nostril, which is linear-oblong, and near the margin, besides which there are several faint grooves; at the base is a somewhat triangular horny plate detached from the rest of the mandible, of which latter the margin is very convex behind the nostrils, then ascends, forms a slight festoon before them, and finally a deep sinus behind the decurved, narrow, but rather obtuse tip. Lower mandible with the angle rather long and wide, the dorsal line ascending and a little convex, the sides sloping outwards, a ridge passing obliquely from behind the angle to near the tip, the edge sinuate in correspondence with that of the upper, the tip *truncate*.

Body full and compact; neck short and thick; head rather large, ovate. Feet short, placed far behind; tibia bare for a quarter of an inch; tarsus very short, much compressed, anteriorly with small oblique scutella, the rest reticulate; hind toe wanting; anterior toes scutellate, connected by emarginate webs; the inner toe much shorter than the outer, which is of the same length as the middle, claws rather stout, moderately arched, compressed, rather obtuse; on the anterior part of the forehead is a tuft of about twenty linear recurved feathers, of which the longest measures 2½ inches.

Plumage dense, blended, glossy. Wings of moderate length, narrow, pointed; primaries incurved, tapering, the first longest, the rest rapidly graduated; secondaries rounded. Tail very short, rounded, of fourteen rounded feathers.

Bill orange; feet greyish-blue. The general colour of the upper parts is brownish-black, of the lower deep purplish-grey. There is a short line of elongated linear acuminate white feathers, commencing under the eye, and proceeding along the side of the neck.

Length to end of tail 10 inches; bill along the ridge $1\frac{7}{8}$, along the edge of lower mandible 1; wing from flexure $6\frac{9}{16}$; tail $1\frac{7}{8}$; tarsus $1\frac{1}{8}$; inner toe $1\frac{1}{2}$, its claw $\frac{3}{16}$; middle toe $1\frac{4}{16}$, its claw $\frac{4}{16}$; outer toe $1\frac{7}{16}$, its claw $\frac{3}{16}$.

KNOBBED-BILLED PHALERIS.

PHALERIS NODIROSTRIS, *Bonap.*

PLATE CCCCLXVIII.—ADULT.

This bird, which at first sight bears a considerable resemblance to the Little Guillemot, *Mergulus Alle*, I have also represented from a specimen belonging to the Zoological Society of London. The following description, however, is taken from one in my own possession. The species is said to occur on the north-west coast.

KNOBBED-BILLED PHALERIS, *Phaleris nodirostris*, Bonap., Aud. Orn. Biog. vol. v. p. 101.

Adult, 6, wing, 4.

North-west coast of America.

Adult.

Bill shorter than the head, stout, quadrangular at the base; upper mandible with a roundish, compressed, decurved knob on its ridge, between the nostrils, beyond which the outline is deflected and convex, the sides sloping, the edges sharp and overlapping, with a sinus behind the small rather obtuse tip; nostrils linear-oblong, operculate, basal, near the margin; lower mandible with the angle rather long, the dorsal ascending and slightly convex, the sides sloping outwards and flat, the edges directed outwards, thin, the tip *acute*, with a slight sinus behind.

Body full and compact; neck short and thick; head rather large, ovate. Feet short, stout, placed far behind; tibia bare for two-twelfths of an inch; tarsus very short, compressed, covered anteriorly with oblique scutella; hind toe wanting; anterior toes united by emarginate webs; the inner toe considerably shorter than the outer, which is nearly as long as the middle. Claws rather small, moderately arched, compressed, rather acute.

Plumage dense, blended, glossy above. Wings of moderate length, narrow, pointed; primaries tapering, the first longest, the rest rapidly graduated; secondaries rounded. Tail very short, rounded, of fourteen feathers.

Bill orange-red, with its base, including the knob, greyish-blue; feet dusky-grey, claws brownish-black. The general colour of the upper parts



Knotted-billed Puffin.
Adult.

Drawn from Nature by J.J. Audubon F.R.S.E.L.

Engraved & Col'd by J.T. Bowen, Philad'a.

is brownish-black ; the fore part and sides of the head streaked with linear, acuminate, elongated, white feathers ; the tips of the secondaries also white. The cheeks and a small portion of the throat at the base of the bill are dusky ; the lower parts white, mottled with dusky, the tips of the feathers being of that colour.

Length to end of tail 6 inches ; bill along the ridge $\frac{1}{12}$, excluding the outline of the knob, which is $1\frac{1}{2}$ in height, and about the same length, along the edge of lower mandible $\frac{7}{8}$; wing from flexure 4 ; tail $1\frac{1}{4}$; tarsus $\frac{9}{12}$; inner toe $\frac{7}{12}$, its claw $\frac{1}{12}$; middle toe $\frac{9}{12}$, its claw $\frac{3}{12}$; outer toe $\frac{1}{12}$, its claw $\frac{2}{12}$.

GENUS IV.—MERGULUS, Ray. SEA-DOVE.

Bill shorter than the head, stout, nearly straight, sub-pentagonal at the base, compressed towards the end ; upper mandible with the dorsal line convexo-declinate, the ridge convex, the sides sloping, the edges sharp and overlapping, the tip rather obtuse, nasal depression short and broad ; nostrils basal, oblong ; lower mandible with the angle long and wide, the dorsal line ascending, straight, the sides convex, toward the end ascending and flattened, the edges sharp and inclinate, the tip acute, with a sinus behind. Head large, ovate ; neck short and thick ; body full and compact. Feet short, rather stout ; tibia bare for a very short space ; tarsus very short, compressed, anteriorly covered with oblique scutella ; hind toe wanting ; anterior toes connected by entire webs, the third and fourth nearly equal. Claws rather small, moderately arched, compressed, rather acute. Plumage dense, glossy, blended. Wings of moderate length, narrow, pointed ; the first quill longest, secondaries rounded. Tail very short, slightly rounded, of twelve feathers.

COMMON SEA-DOVE.—LITTLE GUILLEMOT

MERGULUS ALLE, *Linn.*

PLATE CCCCLXIX.—MALE AND FEMALE.

This interesting little bird sometimes makes its appearance on our eastern coasts during very cold and stormy weather. It does not proceed much farther southward than the shores of New Jersey, where it is of very rare occurrence. Now and then some are caught in a state of exhaustion, as I have known to be the case especially in Passamaquody Bay near Eastport in Maine, and in the vicinity of Boston and Salem in Massachusetts.

In the course of my voyages across the Atlantic, I have often observed the Little Guillemots in small groups, rising and flying to short distances at the approach of the ship, or diving close to the bow and reappearing a little way behind. Now with expanded wings they would flutter and run as it were on the surface of the deep; again, they would seem to be busily engaged in procuring food, which consisted apparently of shrimps, other crustacea, and particles of sea-weeds, all of which I have found in their stomach. I have often thought how easy it would be to catch these tiny wanderers of the ocean with nets thrown expertly from the bow of a boat, for they manifest very little apprehension of danger from the proximity of one, insomuch that I have seen several killed with the oars. Those which were caught alive and placed on the deck, would at first rest a few minutes with their bodies flat, then rise upright and run about briskly, or attempt to fly off, which they sometimes accomplished, when they happened to go in a straight course the whole length of the ship so as to rise easily over the bulwarks. On effecting their escape they would alight on the water and immediately disappear.

During my visit to Labrador and Newfoundland I met with none of these birds, although the codfishers assured me that they frequently breed there. I am informed by Mr. TOWNSEND that this species is found near the mouth of the Columbia river.

LITTLE AUK, *Alca Alle*, Wils. Amer. Orn., vol. ix. p. 94.

URIA ALLE, Bonap. Syn., p. 425.

LITTLE GUILLEMOT, *Uria Alle*, Swains. and Rich. F. Bor. Amer., vol. ii. p. 479.



Little Auk-Geese above.

1. Male. 2. Female.

Drawn from Nature by J. J. Audubon FRSL.

Letter Printed & Col'd by J. T. Bowen, Philad'a.

LITTLE AUK OR SEA-DOVE, Nutt. Man., vol. ii. p. 531.

LITTLE GUILLEMOT, *Uria Alle*, Aud. Orn. Biog., vol. iv. p. 304.

Male, $7\frac{1}{2}$, $14\frac{1}{2}$.

Rare and only during winter along the coast of the United States, from New York to Maine. More abundant along the coast of Nova Scotia, and far at sea. Breeds on the Arctic coasts.

Adult Male in summer.

Bill shorter than the head, stout, straightish, sub-pentagonal at the base, compressed towards the end. Upper mandible with the dorsal line convexo-declinate, the ridge convex, the sides sloping, the edges sharp and overlapping, the tip rather obtuse. Nasal depression short and broad; nostrils basal, oblong, with a horny operculum. Lower mandible with the angle long and wide, the dorsal outline very short, ascending and straight, the sides convex, toward the end ascending and flattened, the edges thin and inclinate, the tip acute, with a sinus behind.

Body full and compact; neck short and thick; head large, ovate. Feet short, rather stout; tibia bare for two-twelfths of an inch; tarsus very short, compressed, covered anteriorly with oblique scutella, behind with angular scales; hind toe wanting; anterior toes connected by reticulated webs, the inner much shorter than the outer, which is almost as long as the middle; the scutella numerous. Claws rather small, moderately arched, compressed, rather acute, that of the middle toe having its inner edge considerably expanded.

Plumage dense, blended, glossy. Wings of moderate length, narrow, pointed; primaries pointed, the first longest, the rest rapidly graduated; secondaries rounded. Tail very short, slightly rounded, of twelve feathers.

Bill black. Iris dark hazel. Feet pale flesh-coloured; webs dusky; claws black. Inside of mouth light yellow. The head, upper part of neck, and all the upper surface, glossy bluish-black. A small spot on the upper eyelid, another on the lower, several longitudinal streaks on the scapulars, and a bar along the tips of the secondary quills, white. The lower parts white; the feathers on the sides under the wings have the outer webs white, the inner dusky; lower wing-coverts blackish-grey.

Length to end of tail $7\frac{1}{2}$ inches, to end of claws $7\frac{3}{8}$, to end of wings $6\frac{7}{8}$, to carpal joint $2\frac{1}{2}$; extent of wings $14\frac{1}{2}$; wing from flexure $4\frac{1}{2}$; bill along the ridge $\frac{4}{5}$, along the edge of lower mandible 1; tarsus $\frac{3}{4}$; middle toe 1; its claw $\frac{1}{4}$; outer toe 1, claw $\frac{1}{8}$; inner toe $\frac{3}{8}$, its claw $\frac{1}{8}$. Weight $8\frac{1}{2}$ oz.

Adult Female in winter.

In winter, the throat and the lower parts of the cheeks are white; the

sides and fore part of the neck white, irregularly barred with blackish-grey ; the upper parts of a duller black than in summer.

There is nothing very remarkable in the anatomy of this bird, beyond what is observed in the Auks and Guillemots. The ribs extend very far back, and, having the dorsal and sternal portions much elongated, are capable of aiding in giving much enlargement to the body, of which the internal, or thoracic and abdominal cells are very large. The sub-cutaneous cells are also largely developed, as in many other diving and plunging birds.

The roof of the mouth is flat, broad, and covered with numerous series of short horny papillæ directed backwards. The tongue is large, fleshy, 10 twelfths of an inch long, emarginate at the base, flat above, horny on the back. The heart is large, measuring 10 twelfths in length, $8\frac{1}{2}$ twelfths in breadth. The right lobe of the liver is $1\frac{3}{4}$ inches in length, the left $1\frac{1}{2}$; the gall-bladder is elliptical. The kidneys are very large.

The œsophagus, Fig. 1, *a b c*, is 3 inches 10 twelfths long, its walls very

Fig 1.

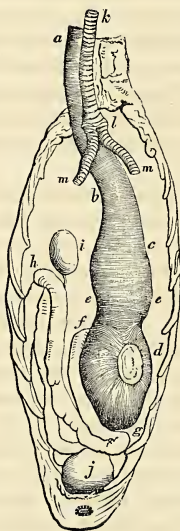


Fig. 2.

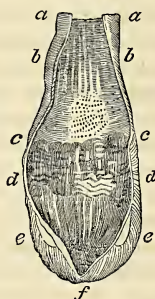


Fig. 3.



thin, its inner or mucous coat thrown into longitudinal plates; its diameter at the middle of the neck 5 eighths, diminishing to 4 twelfths as it enters the thorax. It then enlarges and forms the proventriculus, *e e*, which has a diameter of 8 twelfths; the glandules are cylindrical, very numerous, and arranged in a complete belt, half an inch in breadth, in the usual manner, as seen in Fig. 2, *b c*. The stomach, properly so called, Fig. 1, *d g*, is oblong, 11 twelfths in length, 8 twelfths in breadth; its muscular coat moderately thick, and disposed into two lateral muscles with large tendons; its epithelium, Fig. 2, *c d e*, thick, hard, with numerous longitudinal and transverse rugæ, and of a dark reddish-colour. The duodenum, *f g h*, curves in the usual manner at the distance of $1\frac{1}{4}$ inches, ascends towards the upper surface of the right lobe of the liver for 1 inch and 10 twelfths, then forms 4 loops, and from above the proventriculus passes directly backwards. The length of the intestine, *f g h i*, is $16\frac{1}{2}$ inches, its diameter $2\frac{1}{2}$ twelfths, and nearly uniform as far as the rectum, which is $1\frac{1}{4}$ inches long, at first 3 twelfths in diameter, enlarged into an ovate cloaca of great size, Fig. 3, *b*; the cæca *a a*, $4\frac{1}{2}$ twelfths long, cylindrical, $\frac{1}{2}$ twelfth in diameter, obtuse.

The trachea, Fig. 1, *k l*, is very wide, flattened, its rings unossified, its length $2\frac{9}{12}$ inches, its breadth 3 twelfths, nearly uniform, but at the lower part contracted to 2 twelfths. There are 75 rings, with 5 inferior blended rings, which are divided before and behind. The bronchi, Fig. 1, *m m*, are wide and rather elongated, with about 25 half rings. The contractor muscles are extremely thin, the sterno-tracheal slender; there is a pair of inferior laryngeal attached to the first bronchial rings.

The above account of the digestive organs of this bird will be seen to be very different from that given by Sir EVERARD HOME, who has, in all probability, mistaken the species. "There is still," says he, "one more variety in the structure of the digestive organs of birds, that live principally upon animal food, which has come under my observation; and with an account of which I shall conclude the present lecture. This bird is the *Alca Alle* of Linnæus, the Little Auk. The termination of the œsophagus is only known by the ending of the cuticular lining, and the beginning of the gastric glands; for the cardiac cavity is one continued tube, extending considerably lower down in the cavity of the abdomen, and gradually enlarging at the lower part: it then turns up to the right side, about half-way to the origin of the cavity, and is there connected to a small gizzard, the digastric muscle of which is strong, and a small portion of the internal surface on each side has a hard cuticular covering. The gastric glands at the upper part are placed in four distinct longitudinal rows, becoming more and more numerous towards the lower part of the cavity, and extend to the bottom, where it turns up. The extent of the cavity in which the gastric

glands are placed, exceeds anything met with in the other birds that live upon fish; and the turn which the cavity takes almost directly upwards, and the gizzard being at the highest part instead of the lowest, are peculiarities, as far as I am acquainted, not met with in any other birds of prey. This mechanism, which will be better understood by examining the engraving, makes the obstacles to the food in its passage to the intestines unusually great; and enables the bird to digest both fishes and sea-worms with crustaceous shells. It appears to be given for the purpose of economizing the food in two different ways,—one retaining it longer in the cardiac cavity, the other supplying that cavity with a greater quantity of gastric liquor than in other birds. This opinion is further confirmed by the habits of life of this particular species of bird, which spends a portion of the year in the frozen regions of Nova Zembla, where the supplies of nourishment must be both scanty and precarious."

With respect to this statement and the reasonings founded upon it, it will be seen from the description and accompanying figures above, taken directly from nature, and without the least reference to the dissections or theories of any person, that the œsophagus and stomach of the Little Auk or Guillemot, *Alca Alle* of Linnæus, are very similar to those of other Auks, Guillemots, Divers, and fish-eating birds in general. The cardiac or proventricular cavity forms no curve; and the gizzard with which it is connected, is not small, nor has it merely a small portion of the internal surface on each side covered with a hard cuticular lining; for the epithelium covers its whole surface, and is of considerable extent. The gastric glands are not at all disposed as represented by Sir E. HOME, but are aggregated in the form of a compact belt half an inch broad, Fig. 2, b, c. As to the ingenious reasoning by which the economy of the Little Auk is so satisfactorily accounted for, it is enough here to say, that having no foundation, it is of less than no value. But were there such a curvature as that in question, there could be no propriety in supposing that it presented any great obstacle to the passage of the food, or retained it longer than usual. Nor is the statement as to scanty and precarious supply of nourishment correct; for the Arctic Seas, to which this bird resorts in vast numbers, are represented by navigators as abounding in small crustacea, on which chiefly the Little Auk feeds, and that to such an extent as to colour the water for leagues. Besides, if there were such a scarcity of food in Nova Zembla, why should the birds go there? In short, the whole statement is incorrect; and the many compilers, from Dr. CARUS to the most recent, who have pressed it into their service, may, in their future editions, with propriety leave it out, and supply its place with something equally ingenious.

The egg of this species measures one inch and nearly five-eighths in

length, one inch and an eighth in its greatest breadth. It is remarkably large for the size of the bird, and of a dull uniform pale greenish-blue.

GENUS V.—URIA, *Lath.* GUILLEMOT.

Bill generally shorter than the head, stout, compressed, tapering, acute ; upper mandible with the dorsal line slightly arched ; the ridge narrow, broader at the base, the sides sloping, the edges sharp and inflected, the tip a little decurved, with a slight notch ; nasal groove broad, feathered ; nostrils at its lower edge, sub-basal, lateral, longitudinal, linear ; lower mandible with the angle rather long, narrow, the dorsal line ascending and straight, the back very narrow, the sides nearly flat, the edges sharp and inflected, the tip acute. Head large, oblong ; neck short and thick ; body stout, elongated, rather depressed. Feet short, placed far behind ; the greater part of the tibia concealed, its lower part bare ; tarsus short, stout, compressed, anteriorly scutellate ; toes three, of moderate length, middle toe longest, outer little shorter, scutellate, connected by entire webs. Claws small, slightly arched, compressed, rather acute. Plumage dense, very soft, blended. Wings rather short, narrow, acute ; primary quills curved, tapering, the first and second longest ; secondaries short, rounded. Tail very short, rounded, of twelve or more feathers.

BLACK-THROATED GUILLEMOT.

URIA ANTIQUA, *Gmel.*

PLATE CCCCLXX.—ADULT AND YOUNG.

This species, which is said to occur on the north-west coast of America, has not been met with by me. The figures in the plate were taken from specimens in the Museum of the Zoological Society of London, by permission of the Council.

ALCA ANTIQUA, *Gmel. Syst. Nat.*, vol. i. p. 551.

BLACK-THROATED GUILLEMOT, *Uria antiqua*, *Aud. Orn. Biog.*, vol. v. p. 100.

Adult, $10\frac{1}{2}$, wings, $5\frac{9}{12}$.

North-west coast of America. Abundant.

Adult.

Bill shorter than the head, stout, straightish, compressed toward the end; upper mandible with the dorsal line declinate and convex, the sides sloping, the edges sharp and overlapping, the tip rather obtuse; lower mandible with the angle long and rather wide, the dorsal outline ascending, straight, the sides sloping outwards and flattened, the edges thin and direct, the tip acute, with a slight sinus behind.

Body full and compact; neck short and thick; head rather large, ovate. Feet short, stout, placed far behind; tibia bare for a short space; tarsus very short, compressed, covered anteriorly with oblique scutella, behind with angular scales; hind toe wanting; anterior toes scutellate, of moderate length, connected by emarginate webs, the inner toe much shorter than the outer, which is nearly as long as the middle. Claws rather small, moderately arched, compressed, rather acute.

Plumage dense, blended, glossy. Wings of moderate length, narrow, pointed; primaries tapering, the first longest, the rest rapidly graduated, secondaries rounded. Tail very short, rounded.

Bill and feet yellow, claws dusky. The head and upper part of the neck are black, excepting a band of white elongated linear feathers, beginning over the eye and extending down the hind part of the neck, and a broad band of white commencing behind the ear and curving forwards, to join the



Black-throated Guillemot

1 Adult 2 Young

Drawn from Nature by J. Audubon F.R.S.

Printed & Col'd by J. T. Bowen Philad^a



Horned-billed Gull

Adult.

Drawn from Nature by J. J. Audubon FRS. & L.

Printed & Col'd by J. T. Bowen, Philad'a.

white which is the general colour of the lower parts, with the exception of the flanks, which are black. All the upper parts also are greyish-black.

Length to end of tail $10\frac{1}{2}$ inches; bill along the ridge $7\frac{1}{2}$, along the edge of lower mandible $1\frac{2}{3}$; wing from flexure $5\frac{2}{3}$; tail $1\frac{1}{2}$; tarsus $1\frac{1}{2}$; middle toe $1\frac{2}{3}$, its claw $\frac{4}{5}$.

Young fully fledged.

The young bird has the bill black, the feet dusky, the upper parts blackish-grey, each feather black in the centre, the lower greyish-yellow, transversely barred with dusky, the tail broadly tipped with white.

HORNED-BILLED GUILLEMOT.

URIA OCCIDENTALIS, Bonap.

PLATE CCCCLXXI.—ADULT.

This species is from the north-west coast of America, the figure was taken from a specimen lent to me for that purpose by the Prince of MUSIGNANO.

CERORHYNCHA OCCIDENTALIS, Bonap. Syn., p. 428.

WESTERN CERORHYNCHA, Nutt. Man., vol. ii. p. 538.

HORNED-BILLED GUILLEMOT, *Ceratorhyncha occidentalis*, Aud. Orn. Biog., vol. v. p. 104.

Adult, $15\frac{1}{2}$, wing, $6\frac{1}{2}$.

North-west coast of America.

Bill shorter than the head, stout, straightish, broad at the base, the mouth measuring seven-eighths of an inch across, compressed toward the end; upper mandible with an oblong compressed knob on the ridge between the nostrils, beyond which the dorsal line is declinate and decurved toward the end, the sides sloping, the edges sharp, the tip narrow, obtuse, with a distinct notch immediately behind it; the gap-line slightly arched; lower mandible with the angle long and rather wide, the dorsal outline ascending and straight, the sides sloping outwards and flattened, the edges thin and direct, the tip acute. Nostrils linear, near the margin, pervious.

Body full and compact; neck short and thick; head large, ovato-oblong. Feet short, stout, placed far behind; tibia bare for a short space; tarsus very

short, anteriorly scutellate, laterally reticulate; hind toe wanting; anterior toes scutellate, of moderate length, connected by emarginate webs, the inner toe much shorter than the outer, which is nearly as long as the middle. Claws rather small, slightly arched, compressed, rather acute.

Plumage dense, blended, rather glossy on the upper parts. Wings of moderate length, narrow, pointed; primaries tapering, the first longest, the rest rapidly graduated, secondaries rounded. Tail very short, even, of sixteen elastic feathers.

Bill orange-yellow; feet greyish-yellow. The general colour of the upper parts is black, as are the cheeks, the upper part of the fore neck and its sides; the lower parts white. Two decurved white bands on the sides of the head, one commencing over the eye, the other at the angle of the mouth, both being formed by elongated, linear, acuminate feathers. The shafts of the wing-feathers are reddish-brown above, white beneath.

Length to end of tail $15\frac{1}{2}$ inches, to end of claws $16\frac{3}{4}$; bill along the ridge $1\frac{5}{12}$, not including the outline of the knob, which is $\frac{4}{12}$ high, along the edge of lower mandible $1\frac{1}{2}$, breadth of upper mandible below the knob, $\frac{2}{6}$; wing from flexure $6\frac{1}{2}$; tarsus $1\frac{1}{2}$; inner toe $1\frac{2}{3}$, its claw $\frac{5}{12}$; middle toe $1\frac{1}{2}$, its claw $\frac{5}{12}$; outer toe $1\frac{5}{12}$, its claw $\frac{5}{12}$.

THE LARGE-BILLED GUILLEMOT.

URIA BRUNNICHI, *Sabine*.

PLATE CCCLXXII.—ADULT MALE.

I have never observed this bird on any part of the coast of our Middle Districts, and, although I was told that it not unfrequently occurred about the Bay of Boston, I failed in my endeavours to procure it there. The specimen from which my figure was made, was sent to me in ice, along with several other rare birds, from Eastport in Maine. I received it quite fresh and in excellent plumage, on the 18th of February, 1833. It had been shot along with several other individuals of the same species while searching for food in the waters of Pasmaquody Bay, which were then covered with broken ice. Its flight was described by Mr. CURTIS, who sent it to me, as



Laysan-billed Gull
Male

Life Portrait & Color by J. T. Brown, Philad.

Drawn from Nature by J. L. Audubon, Philad. E. L. S.

similar to that of the Foolish Guillemot, with which it associated. No other information was transmitted, excepting that it dived and swam like the other species. I afterwards sent the skin to my friend the Rev. JOHN BACHMAN, in whose collection it remains.

No individuals of this species were observed by my party on our way to Labrador ; and as the Foolish Guillemot was abundant on the coast of that country, I concluded that the Thick-billed Guillemots which visit our eastern seas in winter, set out for the far north at an earlier period than the others. I am indebted to Mr. HEWITSON of Newcastle, author of the "British Oology," for a description of an egg of this bird, which is in the valuable collection of the Messrs. HANCOCKS, who procured it from Greenland. It measures $3\frac{1}{2}$ inches in length, by $2\frac{1}{2}$ at its broadest part, and is of a bluish-green colour, streaked and spotted with black or very dark umber. Male, $18\frac{1}{2}$, 30.

Occasionally procured in Maine. Not very rare off the coast of Nova Scotia. Breeds from Hudson's Bay to the Arctic Seas.

URIA BRUNNICHII, Bonap. Syn., p. 424.

URIA BRUNNICHII, *Brunnich's Guillemot*, Swains. and Rich. F. Bor. Amer., vol. ii. p. 477.

LARGE-BILLED GUILLEMOT, Nutt. Man., vol. ii. p. 529.

LARGE-BILLED GUILLEMOT, *Uria Brunnichii*, Aud. Orn. Biog., vol. iii. p. 336.

Adult Male in winter.

Bill shorter than the head, stout, tapering, compressed, acute. Upper mandible with the dorsal line slightly curved, the ridge narrow, broader at the base, the sides sloping, the edges sharp and inflected, the tip a little decurved, with a slight notch. Nasal groove broad, feathered ; nostrils at its lower edge, sub-basal, lateral, longitudinal, linear, pervious. Lower mandible with the angle medial, narrow, the dorsal line sloping upwards and straight, the back very narrow, the sides nearly flat, the edges sharp and inflected.

Head large, oblong, depressed, narrowed before. Eyes of moderate size. Neck short and thick. Body stout, rather depressed. Wings small. Feet short, placed far behind ; the greater part of the tibia concealed, its lower portion bare ; tarsus short, stout, compressed, anteriorly sharp, and covered with a double row of scutella, the sides with angular scales ; toes of moderate length, the first wanting, the third longest, the fourth longer than the second, all covered above with numerous scutella, webbed, the lateral ones with small margins ; claws small, slightly arched, compressed, rather acute, that of the middle toe largest, with a dilated inner edge.

Plumage dense, very soft, blended ; on the head very short. Wings

rather short, narrow, acute ; primary quills curved, tapering, the second longest, the first slightly shorter, the rest rapidly graduated ; secondaries short, incurved, broad, rounded. Tail very short, rounded, of twelve narrow feathers.

Bill black. Iris dark brown. Feet dusky, tinged with red. The general colour of the plumage is greyish-black on the upper parts, those of the head tinged with brown. The sides of the head and neck, its fore part, the breast, abdomen, edges of the wings and the tips of the secondaries, white ; the sides shaded with greyish-black ; a line of the same behind the eye.

Length to end of tail $18\frac{1}{2}$ inches, to end of claws $21\frac{1}{2}$; extent of wings 30 ; wing from flexure 8 ; tail $2\frac{1}{2}$; bill along the ridge $1\frac{2}{3}$, along the edge of lower mandible 2 ; tarsus $1\frac{4}{5}$; middle toe $1\frac{3}{5}$, its claw $\frac{1}{2}$. Weight $2\frac{1}{2}$ lbs.

THE FOOLISH GUILLEMOT.—MURRE.

URIA TROILE, Linn.

PLATE CCCCLXXIII.—MALE AND FEMALE.

This bird is seldom found farther south than the entrance of the Bay of New York, where, however, it appears only during severe winters, for being one of the most hardy inhabitants of the northern regions, its constitution is such as to enable it to bear without injury the rigours of their wintry climates. About the bays near Boston the Guillemots are seen every year in greater or less numbers, and from thence to the eastward they become gradually more abundant. A very old gunner whom I employed while at Boston, during the winter of 1832–3, assured me, that when he was a young man this species bred on many of the rocky islands about the mouth of the bay there ; but that for about twenty years back none remained after the first days of April, when they departed for the north in company with the Thick-billed Guillemot, the Common Auk, the Puffin, and the Eider and King Ducks, all of which visit these bays in hard weather. In the bay of Fundy, the Foolish Guillemot is very numerous, and is known by the name of *Murre*, which it retains among all the egggers and fishermen of Newfoundland and Labrador, where it breeds in myriads. To those countries, then, I



Forked Guillemot Murre

Drawn from Nature by J. Audubon FRSELS

1. Male 2. Female

Lake Pontchartré Col. by J. T. Bowen Philad

must lead you, good reader, as there we can with ease study the habits of these birds.

Stay on the deck of the Ripley by my side this clear and cold morning. See how swiftly scuds our gallant bark, as she cuts her way through the foaming billows, now inclining to the right and again to the left. Far in the east, dark banks of low clouds indicate foul weather to the wary mariner, who watches the approach of a northern storm with anxiety. Suddenly the wind changes; but for this he has prepared; the topsails are snugged to their yards, and the rest are securely reefed. A thick fog obscures all around us. The waters, suddenly checked in their former course, furiously war against those which now strike them in front. The uproar increases, the bark is tossed on every side; now a sweeping wave rushes against the bows, the vessel quivers, while down along her deck violently pour the waters, rolling from side to side, seeking for a place by which they may escape. At this moment all about you are in dismay save the Guillemots. The sea is covered with these intrepid navigators of the deep. Over each tumultuous billow they swim unconcerned on the very spray at the bow of the vessel, and plunging as if with pleasure, up they come next moment at the rudder. Others fly around in large circles, while thousands contend with the breeze, moving directly against it in long lines, towards regions unknown to all, save themselves and some other species of sea birds.

The Guillemots pair during their migration;—many of them at least do so. While on my way toward Labrador, they were constantly within sight, gambolling over the surface of the water, the males courting the females, and the latter receiving the caresses of their mates. These would at times rise erect in the sea, swell their throats, and emit a hoarse puffing guttural note, to which the females at once responded, with numerous noddings to their beaux. Then the pair would rise, take a round in the air, re-align, and seal the conjugal compact; after which they flew or swam together for the season, and so closely, that among multitudes on the wing or on the waves, one might easily distinguish a mated pair.

Not far from Great Macatina Harbour lie the Murre Rocks, consisting of several low islands, destitute of vegetation, and not rising high from the waters. There thousands of Guillemots annually assemble in the beginning of May, to deposit each its single egg, and raise its young. As you approach these islands, the air becomes darkened with the multitudes of birds that fly about; every square foot of the ground seems to be occupied by a Guillemot planted erect as it were on the granite rock, but carefully warming its cherished egg. All look toward the south, and if you are fronting them, the snowy white of their bodies produces a very remarkable effect, for the birds at some distance look as if they were destitute of head, so much does that

part assimilate with the dark hue of the rocks on which they stand. On the other hand, if you approach them in the rear, the isle appears as if covered with a black pall.

Now land, and witness the consternation of the settlers! Each affrighted leaves its egg, hastily runs a few steps, and launches into the air in silence. Thrice around you they rapidly pass, to discover the object of your unwelcome visit. If you begin to gather their eggs, or, still worse, to break them, in order that they may lay others which you can pick up fresh, the Guillemots all alight at some distance, on the bosom of the deep, and anxiously await your departure. Eggs, green and white, and almost of every colour, are lying thick over the whole rock; the ordure of the birds mingled with feathers, with the refuse of half-hatched eggs partially sucked by rapacious Gulls, and with putrid or dried carcasses of Guillemots, produces an intolerable stench; and no sooner are all your baskets filled with eggs, than you are glad to abandon the isle to its proper owners.

On one occasion, whilst at anchor at Great Macatina, one of our boats was sent for eggs. The sailors had eight miles to pull before reaching the Murre Islands, and yet ere many hours had elapsed, the boat was again alongside, loaded to a few inches of the gunwale, with 2500 eggs! Many of them, however, being addle, were thrown overboard. The order given to the tars had been to bring only a few dozens; but, as they said, they had forgotten!

The eggs are unaccountably large for the size of the bird, their average length being three inches and three-eighths, and their greatest breadth two inches. They are pyriform or elongated, with a slight compression towards the smaller end, which again rather swells and is rounded at the extremity. They afford excellent food, being highly nutritive and palatable, whether boiled, roasted, poached, or in omelets. The shell is rough to the touch, although not granulated. Some are of a lively verdigris colour, others of different tints, but all curiously splashed, as it were, with streaks or blotches of dark umber and brown. My opinion, however, is, that, when first dropped, they are always pure white, for on opening a good number of these birds, I found several containing an egg ready for being laid, and of a pure white colour. The shell is so firm that it does not easily break, and I have seen a quantity of these eggs very carelessly removed from a basket into a boat without being damaged. They are collected in astonishing quantities by "the egggers," and sent to distant markets, where they are sold at from one to three cents each.

Although the Guillemots are continually harassed, their eggs being carried off as soon as they are deposited, and as long as the birds can produce them, yet they return to the same islands year after year, and, notwithstanding all the efforts of their enemies, multiply their numbers.

The Foolish Guillemot, as I have said, lays only a single egg, which is the case with the Thick-billed Guillemot also. The Razor-billed Auk lays two, and the Black Guillemot usually three. I have assured myself of these facts, not merely by observing the birds sitting on their eggs, but also by noticing the following circumstances. The Foolish Guillemot, which lays only one, plucks the feathers from its abdomen, which is thus left quite bare over a roundish space just large enough to cover its single egg. The Thick-billed Guillemot does the same. The Auk, on the contrary, forms two bare spots, separated by a ridge of feathers. The Black Guillemot, to cover her three eggs, and to warm them all at once, plucks a space bare quite across her belly. These observations were made on numerous birds of all the species mentioned. In all of them, the males incubate as well as the females, although the latter are more assiduous. When the Guillemites are disturbed, they fly off in silence. The Auks, on the contrary, emit a hoarse croaking note, which they repeat several times, as they fly away from danger. The Foolish Guillemot seldom if ever attempts to bite, whereas the Razor-billed Auk bites most severely, and clings to a person's hand until choked. The plumage of all the birds of this family is extremely compact, closely downed at the root, and difficult to be plucked. The fishermen and eggers often use their skins with the feathers on as "comforters" round their wrists. The flesh is dark, tough, and not very palatable; yet many of these birds are eaten by the fishermen and sailors.

The young, which burst the egg about the beginning of July, are covered with down of a brownish-black colour. When eight or ten days old they are still downy, but have acquired considerable activity. As they grow up, they become excessively fat, and seem to be more at ease on the water than on the land. About the middle of August they follow their parents to the open sea, the latter being then seldom able to fly, having dropped their quills; and by the middle of September scarcely any of these birds are to be found on or near the islands on which they breed, although great numbers spend the winter in those latitudes.

There is no perceptible difference between the sexes as to colour, but the males are larger than the females. The white line that encircles the eye and extends toward the hind head is common to both sexes, but occurs only in old birds. Thousands of these Guillemites however breed without having yet acquired it, there merely being indications of it to be seen on parting the feathers on the place, where there is a natural division.

The flight of the Foolish Guillemot is rapid and greatly protracted, being performed by quick and unintermitted beatings. They move through the air either singly or in bands, in the latter case seldom keeping any very regular order. Sometimes they seem to skim along the surface for miles,

while at other times they fly at the height of thirty or forty yards. They are expert divers, using their wings like fins, and under water looking like winged fishes. They frequently plunge at the flash of the gun, and disappear for a considerable time. Before rising, they are obliged to run as it were on the water, fluttering for many yards before they get fairly on wing.

Those which I kept alive for weeks on board the Ripley, walked about and ran with ease, with the whole length of their tarsus touching the deck. They took leaps on chests and other objects to raise themselves, but could not fly without being elevated two or three feet, although when they are on the rocks, and can take a run of eight or ten yards, they easily rise on wing.

The islands on which the Guillemots breed on the coast of Labrador, are flattish at top, and it is there, on the bare rock, that they deposit their eggs. I saw none standing on the shelvings of high rocks, although many breed in such places in some parts of Europe. Their food consists of small fish, shrimps, and other marine animals; and they swallow some gravel also.

URIA TROILE, Bonap. Syn., p. 424.

URIA TROILE, *Foolish Guillemot*, Swains. and Rich. F. Bor. Amer., vol. ii. p. 477

FOOLISH GUILLEMOT, or MURRE, Nutt. Man., vol. ii. p. 526.

FOOLISH GUILLEMOT, *Uriæ Troile*, Aud. Orn. Biog., vol. iii. p. 142.

Male, 17½, 30.

More or less abundant during winter on the coast of Massachusetts and Maine, rarely as far south as New York. Breeds in vast multitudes on the Rocky Islands of the Gulf of St. Lawrence, Newfoundland, and Labrador. Occasionally found in Hudson's Bay.

Adult Male, in summer.

Bill of moderate length, rather stout, tapering, compressed, acute. Upper mandible with the dorsal line slightly curved, the ridge narrow, broader at the base, the sides sloping, the edges short and inflected, the tip a little decurved with a slight notch. Nasal groove broad, feathered; nostrils at its lower edge, sub-basal, lateral, longitudinal, linear, pervious. Lower mandible with the angle medial, narrow, the dorsal line sloping upwards, and straight, the back very narrow, the sides nearly flat, the edges sharp and inflected.

Head oblong, depressed, narrowed before. Eyes rather small. Neck short and thick. Body stout, rather depressed. Wings rather small. Feet short, placed far behind; the greater part of the tibia concealed, its lower portion bare; tarsus short, stout, compressed, anteriorly sharp, and covered with a double row of scutella, the sides with angular scales; toes of moderate length, the first wanting, the third nearly longest, the fourth longer than the

2



3



Black Guillemot.

Drawn from Nature by J. J. Audubon F.R.S.Et.

1. Adult - Summer Plumage - 2. Adult in Winter - 3. Young

Engr. Printed & Col'd by J. T. Bowen Platel.

second ; all covered above with numerous scutella, webbed, the lateral ones with small margins ; claws small, slightly arched, compressed, rather acute, the middle one larger, with a dilated inner edge.

Plumage dense, very soft, blended ; on the head very short. Wings rather short, narrow, acute ; primary quills curved, tapering, the first longest, the second little shorter, the rest rapidly graduated ; secondaries short, incurved, broad, rounded. Tail very short, rounded, of twelve narrow feathers.

Bill black ; inside of mouth gamboge-yellow. Iris dark brown. Feet black. The general colour of the plumage is greyish-black on the upper parts ; the sides of the head and upper part of the neck black, tinged with brown. A white bar across the wing, formed by the tips of the secondary quills, and a line of the same encircling the eye, and extending behind it. The lower parts white.

Length to end of tail $17\frac{1}{2}$ inches, to end of claws $19\frac{1}{4}$, to end of wings $17\frac{1}{2}$; extent of wings 30 inches ; wing from flexure $7\frac{1}{2}$; tail 2 ; tarsus $1\frac{3}{12}$; middle toe $1\frac{7}{12}$, its claw $\frac{1}{12}$. Weight 2 lbs.

Adult Female.

The female is similar to the male, and, when mature, has the white line around and behind the eye.

THE BLACK GUILLEMOT.

URIA GRYLLE, *Linn.*

PLATE CCCCLXXIV.—ADULT IN SUMMER, ADULT IN WINTER, AND YOUNG.

It was a frightful thing to see my good Captain, HENRY EMERY, swinging on a long rope upon the face of a rocky and crumbling eminence, at a height of several hundred feet from the water, in search of the eggs of the Black Guillemot, with four or five sailors holding the rope above, and walking along the edge of the precipice. I stood watching the motions of the adventurous sailor. When the friction of the rope by which he was suspended loosened a block, which with awful crash came tumbling down from above him, he, with a promptness and dexterity that appeared to me

quite marvellous, would, by a sudden jerk, throw himself aside to the right or left, and escape the danger. Now he would run his arm into a fissure, which, if he found it too deep, he would probe with a boat-hook. Whenever he chanced to touch a bird, it would come out whirring like a shot in his face; while others came flying from afar toward their beloved retreats with so much impetuosity as almost to alarm the bold rocksman. After much toil and trouble he procured only a few eggs, it not being then the height of the breeding season. You may imagine, good reader, how relieved I felt when I saw Mr. EMERY drawn up, and once more standing on the bold eminence waving his hat as a signal of success. This happened in one of the Magdeleine Islands, in the Gulf of St. Lawrence.

During severe winters, I have seen the Black Guillemot playing over the waters as far south as the shores of Maryland. Such excursions, however, are of rare occurrence, and it is seldom that any of these birds are to be seen until you reach the Bay of Boston. About the different entrances of the Bay of Fundy, this species is a constant resident, and many individuals breed in fissures, at a moderate height above the water, on the rocky shores of the Island of Grand Manan, and others in the same latitude. Proceeding farther toward the north-east, we found them on Jesticoe Island, and wherever else we happened to touch on our way to Labrador, in which country there is a regular nursery of these birds.

Unlike the Foolish and Thick-billed Guillemots, or the Razor-billed Auk, they do not confine themselves to any particular spot, but take up their abode for the season in any place that presents suitable conveniences. Wherever there are fissures in the rocks, or great piles of blocks with holes in their interstices, there you may expect to find the Black Guillemot.

Whether European writers have spoken of this species at random, or after due observation, I cannot say. All I know is, that every one of them whose writings I have consulted, says that the Black Guillemot lays only *one egg*. As I have no reason whatever to doubt their assertion, I might be tempted to suppose that our species differs from theirs, were I not perfectly aware that birds in different places will construct different nests, and lay more or fewer eggs. Our species always deposits three, unless it may have been disturbed; and this fact I have assured myself of by having caught the birds in more than twenty instances sitting on that number. Nay, on several occasions, at Labrador, some of my party and myself *saw* several Black Guillemots sitting on eggs in the same fissure of a rock, where every bird had three eggs under it, a fact which I communicated to my friend THOMAS NUTTALL. What was most surprising to me was, that even the fishermen there thought that this bird laid only a single egg; and when I asked them how they knew, they simply and good-naturedly answered that they had

heard so. Thus, reader, I might have been satisfied with the sayings of others, and repeated that the bird in question lays one egg ; but instead of taking this easy way of settling the matter, I found it necessary to convince myself of the fact by my own observation. I had therefore to receive many knocks and bruises in scrambling over rugged crags and desolate headlands ; whereas, with less incredulity, I might very easily have announced to you from my easy chair in Edinburgh, that the Black Guillemots of America lay only a single egg. No true student of nature ought ever to be satisfied without personal observation when it can be obtained. It is the "American Woodsman" that tells you so, anxious as he is that you should enjoy the pleasure of studying and admiring the beautiful works of Nature.

To satisfy yourself as to the correctness of the statements which he here lays before you, go to the desolate shores of Labrador. There, in the vernal month of June, place yourself on some granite rock, against the base of which the waves dash in impotent rage ; and ere long you will see the gay Guillemot coming from afar by the side of its mate. They shoot past you on fluttering wings, and suddenly disappear. Go to the place ; lay yourself down on the dripping rock, and you will be sure to see the birds preparing their stony nest, for each has brought a smooth pebble in its bill. See how industriously they are engaged in raising this cold fabric into the form of a true nest, before the female lays her eggs, so that no wet may reach them, from the constant trickling of the waters beneath. Up to the height of two or three inches the pebbles are gradually raised, the male stands by his beloved ; and some morning when you peep into the crevice, you observe that an egg has been deposited. Two days after you find the number complete.

A closet-naturalist was quite surprised, I have been told, when he read in one of my volumes that Grakles form no nests in one portion of the United States, being there contented with merely dropping their eggs in the bottom of a Woodpecker's hole ; while in the Middle States the same species forms a very snug nest. That *his* astonishment was great I do not in the least doubt, especially as I know how surprised I was to find the *Larus argentatus* breeding on fir-trees forty feet above the ground, and to see three eggs, instead of one, placed on a bed of small pebbles beautifully arranged, and every one belonging to a single pair of Black Guillemots. Yet, good reader, as I have also been told, the same person had no doubt whatever that ermines turn from brown to white in winter, that snakes and crabs cast off their skins and shells, and that "fleas are not lobsters ;" but then the reason of his belief was simply that he had read of these things ; and his doubts as to the Grakles arose from the facts having been recently

reported by a stranger from the "far west," who, it seems, talked of things which he had not read of before.

Whilst in Labrador, I was delighted to see with what judgment the Black Guillemot prepares a place for its eggs. Whenever the spot chosen happens to be so situated as to preclude damp, not a pebble does the bird lay there, and its eggs are placed on the bare rock. It is only in what I call cases of urgency that this trouble is taken. About fifty or sixty pebbles or bits of stone are then used, and the number is increased or diminished according to circumstances.

The eggs of this species, which appear disproportionately large, measure two inches and three-eighths in length, by an inch and five-eighths in breadth. Their form is regular; they are rather rough to the touch, although not granulated; their ground colour an earthy white, thickly blotched with very dark purplish-black, the markings larger and closer towards the great end, which, however, is generally left free of them. The shell is much thinner than that of the egg of the Foolish Guillemot or Razor-billed Auk. As an article of food they are excellent, being delicate and nutritious.

The parents pluck the feathers from a space across the lower part of their belly, as soon as incubation commences; and this bare place, when the bird is taken alive, it immediately conceals by drawing the feathers of the upper part of the abdomen over it, as if it were anxious that it should not be observed. When driven from the nest, the Black Guillemot at once runs out of its hiding-place and flies to the water, on which it plays, bathes as it were, dives a few times, and anxiously watches your retreat, after which it soon returns and resumes the arduous task of incubation.

The young, which are at first quite black, are covered with soft down, and emit, although in an under tone, the same lisping notes as their parents. Their legs, feet, and bill are black. The red colour of the legs of the old birds is much brighter during the breeding-season than at any other time, and the mouth also is bright red. About the first of August the Guillemots lead their progeny to the water, and although at this time neither old nor young are able to fly, they dive deeply and with great ease, which enables them to procure abundance of food, for at this season, lints, shrimps, and marine insects are plentiful in all the waters.

While in Labrador, I made a severe experiment to ascertain how long the Black Guillemot could live without food,—an experiment on which I have never since been able to think, without some feeling of remorse. I confined a pair of them in the fissure of a rock for many days in succession. After the entrance was securely closed, I left the place, and for eight days the wind blew so hard that no boat was safe on the waters without the harbour. Many a time I thought of the poor captives, and at last went to their retreat

one rainy afternoon, over a great swell of the sea. The entrance of the fissure was opened, and a stick pushed into the hole, when I had the pleasure of seeing both birds, although apparently in a state of distress, run out by me, and at once fly to the water.

The flight of the Black Guillemot is rapid and continued. As they proceed in their course, they alternately shew the black of their lower parts and the white of their wings. They walk on the rocks with considerable ease, using short steps, and whenever they wish to remove from one crag or block to another, make use of their wings. When their nests are very high above the water, they fly directly into them; and from such heights, if necessity demands it, they at once dive towards the water.

I kept many alive on board the Ripley. They ran on the floor in an erect position for a few yards, fell down on their breasts, rose again, and continued their exertions to escape until they got fairly concealed behind a chest or barrel.

The winter plumage of this species differs so greatly from that of summer, that I have been induced to present you with a figure of the bird in both states. It is difficult to perceive any external difference between the sexes, only the males are rather larger than the females. Their flesh, although black and tough, is not very unpalatable.

The trachea is flattened, with numerous close, transparent rings. The gullet, as in all the other species of this genus, is very dilatable. The gizzard, which is small, has its inner membrane thin and of a yellow colour. The intestines are about the thickness of a goose quill, and measure two feet eight inches in length.

URIA GRYLLE, Bonap. Syn., p. 423.

URIA GRYLLE, *Black Guillemot*, Nutt. Man., vol. ii. p. 523.

BLACK GUILLEMOT, *Uria Grylle*, Aud. Orn. Biog., vol. iii. p. 148; vol. v. p. 627.

Adult, $13\frac{1}{2}$, $21\frac{1}{2}$.

Accidental as far south, on the eastern coast, as New York; not rare from thence eastward, during winter. Breeds from the Bay of Fundy along all the rocky shores, to Labrador, and the highest latitudes, where considerable numbers even spend the winter.

Adult in summer.

Bill shorter than the head, straight, rather stout, tapering, compressed, acute. Upper mandible with the dorsal line nearly straight and sloping, towards the tip slightly arched, the sides sloping and towards the end a little convex, the edges sharp and slightly inflected. Nostrils basal, lateral, linear, partially concealed by the feathers. Lower mandible with the angle

long and very narrow, the dorsal line ascending, straight, the sides sloping upwards, slightly convex, flat at the base, the edges sharp and inflected, the tip acute.

Head of moderate size, oblong ; neck short ; body full, depressed ; wings rather small. Feet placed far behind, short, of moderate size ; tarsus short, compressed, anteriorly scutellate, laterally covered with reticulated angular scales ; toes rather slender, scutellate above, connected by entire reticulated webs, the outer and inner with a small marginal membrane ; the first toe wanting, the third and fourth about equal, the second shortest ; claws small, arched, compressed, rather obtuse, that of the middle toe with a dilated thin inner edge.

Plumage soft, close, blended and velvety ; feathers of the head very short, on the back broadly rounded, of the lower parts more elongated. Wings rather small ; primary quills curved, the first longest, the second little shorter, the rest rather rapidly diminishing ; secondary incurved, broadly rounded. Tail short, narrow, rounded, of twelve rather pointed feathers.

Bill black, inside of mouth vermilion tinged with carmine. Iris deep brown. Feet of the same colour as the mouth, claws black. The general colour of the plumage is deep black, on the upper part tinged with green, on the lower with red, there being only a large patch on each wing, including the secondary coverts and some of the smaller feathers, pure white, as are the lower wing-coverts. The quills and tail are tinged with brown.

Length to end of tail $13\frac{3}{4}$ inches, to end of claws $16\frac{1}{4}$, to end of wings 13 ; extent of wings $21\frac{1}{2}$; wing from flexure $6\frac{1}{2}$; tail 2 ; bill along the ridge $1\frac{1}{4}$, along the gap $1\frac{3}{8}$; tarsus $1\frac{2}{3}$; middle toe $1\frac{1}{4}$, its claw $\frac{3}{8}$. Weight $13\frac{1}{2}$ oz.

Adult in winter.

The bill and iris are of the same colour as in summer, but the red of the feet is paler. The general colour of the plumage is white, the sides of the head, the neck all round, the lower parts, and the rump being of that colour, more or less shaded with grey. The upper part of the head obscurely mottled with greyish-black ; the back and scapulars black, each feather tipped with greyish-white, those of the latter more broadly. The wings and tail brownish-black, the former with the conspicuous white patch as in summer.

Young a few days old.

Bill and feet black, the former tinged with red ; iris dark brown. The general colour of the soft thick down with which the whole body is covered is brownish-black.

Male from Dr. T. M. BREWER. The palate is flat, with two papillate ridges, and a series of papillæ on each side, parallel to the posterior aperture of the nares, which is linear, and 10 twelfths long ; the anterior part con-



Frander-billed Gull

Drawn from Nature by J. A. Audubon, F.R.S.

1. Male, 2. Female.

Lith. Printed & Col'd by J. T. Bowen Philad.

cave, with five prominent lines. Tongue $1\frac{3}{4}$ inches long, slender, tapering, trigonal, horny beneath, papillate at the base, and channelled towards the extremity, the tip pointed and thin-edged. Œsophagus $6\frac{1}{2}$ inches long, 9 twelfths in width along the neck, within the thorax dilated into an enormous sac, 2 inches in length, $1\frac{1}{4}$ in breadth. The stomach is rather large, $1\frac{1}{2}$ inches long, $1\frac{1}{4}$ broad; the epithelium dense, tough, light red, with strong longitudinal rugæ. The proventricular glands form a belt $1\frac{1}{4}$ inches in width, extending over the wider part of the sac. The left lobe of the liver is $2\frac{1}{4}$ inches long, the right lobe 3 inches; the gall-bladder 9 twelfths long, $4\frac{1}{2}$ twelfths in breadth. The intestine is 4 twelfths in width; the cœca 1 inch 4 twelfths long, $3\frac{1}{4}$ twelfths in their greatest breadth, $2\frac{1}{4}$ inches distant from the extremity; the cloaca ovate, 10 twelfths long. Trachea 4 inches 4 twelfths long, from 4 twelfths to $2\frac{1}{2}$ twelfths in breadth; the rings 115. Bronchial half rings 26. The tracheal rings are feeble, unossified, narrow in the middle and behind, as in the Auks, Gulls, Terns, and generally in all birds of which the rings are unossified. There are cleido-tracheal muscles, lateral muscles, sterno-tracheal, and a single pair of inferior laryngeal.

SLENDER-BILLED GUILLEMOT.

URIA TOWNSENDII, *Aud.*

PLATE CCCCLXXV.—ADULT AND YOUNG.

I have received not less than four specimens of this small Guillemot from Mr. TOWNSEND, who procured them on the north-west coast of America, not very far from the mouth of the Columbia river. The changes of colour in birds of this genus are well known to be considerable; and I have represented two individuals, supposing one to be an adult, and the other a young bird in its first plumage.

SLENDER-BILLED GUILLEMOT, *Uria Townsendi*, Aud. Orn. Biog., vol. v. p. 251.

Adult, 10; wing $5\frac{3}{4}$. Young, in autumn, $9\frac{3}{4}$; wing $5\frac{1}{4}$.

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Abundant on the north-west coast of America, not far from the Columbia river.

Adult.

Bill shorter than the head, straight, slender, much compressed, acute. Upper mandible with the dorsal line convex and declinate, the ridge very narrow, the sides erect and convex toward the end, the edges sharp and inflected, with a distinct notch near the tip, which is rather acute and caniculate beneath. Nostrils medial, narrow near the margin, in the fore parts of the long nasal sinus, which is feathered. Lower mandible with the angle long and very narrow, the dorsal line ascending and straight, the sides nearly erect, but convex, the edges sharp and inflected, the tip very acute.

Head of moderate size, oblong; neck short; body full, depressed; wings small. Feet placed far behind, very short and slender; tarsus very short, reticulate; toes slender, with numerous short scutella; the first wanting; the third or middle toe longest, the inner much shorter than the outer; claws small, slightly arched, compressed, rather acute.

Plumage very soft, close, blended, rather glossy; feathers of the head very short, of the back oblong, of the lower parts ovate. Wings small, very narrow, convex, falcate; first quill longest, second a twelfth of an inch shorter, the rest rapidly diminishing; secondaries incurved, obliquely rounded. Tail extremely short, narrow, rounded, of twelve weak, rounded feathers.

Bill black. Feet yellow; claws black. The upper parts are brownish-black, the feathers of the back terminally margined with light grey; the lower parts, cheeks, a transverse band on the nape, both eyelids, and a longitudinal band on each side, formed by some of the scapulars, white, some dusky streaks on the hind part of the sides, and the lower wing-covert greyish-brown, the larger tipped with dull-white.

Length to end of tail 10 inches; bill along the ridge $\frac{3\frac{1}{2}}{1\frac{1}{2}}$, along the edge of lower mandible $1\frac{4}{1\frac{1}{2}}$; wing from flexure $5\frac{2}{1\frac{1}{2}}$; tail $1\frac{4}{1\frac{1}{2}}$. tarsus $\frac{9}{1\frac{1}{2}}$; middle toe $1\frac{1}{1\frac{1}{2}}$, its claw $\frac{2\frac{1}{2}}{1\frac{1}{2}}$.

Young in autumn.

Bill and feet as in the adult. The upper parts are brownish-black, the feathers terminally margined with brown; the occipital band is merely indicated by some lighter feathers, and the scapular band is brownish or chestnut-red. The lower parts have a curious mottled appearance, the feathers being brownish-grey at the end, but in the rest of their extent white, that colour appearing more or less on all parts, and showing a patch on the hind part of the sides.

Length to end of tail $9\frac{3}{4}$ inches; bill along the ridge $\frac{7\frac{1}{2}}{1\frac{1}{2}}$, along the edge of

lower mandible $1\frac{3}{12}$; wing from flexure $5\frac{1}{12}$; tail $1\frac{2}{12}$; tarsus $\frac{7}{12}$; middle toe $\frac{1}{12}$, its claw $\frac{1}{12}$.

Two other individuals, apparently more advanced, or perhaps adults in winter, have the upper parts brownish-black; the lower white but finely mottled, a small portion of the extremity of each feather being greyish-dusky. The white bands on the hind neck and scapulars are formed, and the lower surface of the wing is brownish-grey.

FAMILY XLV.—COLYMBINÆ. DIVERS AND GREBES.

Bill of the length of the head, straight, rather stout, much compressed, pointed; upper mandible with the dorsal line declinate, almost straight, or towards the end convex; nasal groove rather long, feathered at the base. Nostrils basal, linear, direct, pervious. Feet stout, short, placed extremely far behind; tarsus extremely compressed; toes four, the first very small, and lobed; the anterior united by webs, which in some are lobed. Plumage dense, short, glossy, generally silky beneath. Wings small, very narrow, acute. Tail very short, sometimes extremely small, and forming a slight tuft. Tongue slender, trigonal, tapering; oesophagus very wide in its whole length, or narrowed in the anterior part with the proventriculus wide; stomach generally large, muscular, with a dense rugous epithelium: intestine rather long and wide; as are the cœca; cloaca globular.

GENUS I.—COLYMBUS, *Linn.* DIVER.

Bill as long as the head, straight, rather stout, much compressed, tapering, pointed; upper mandible with the dorsal line descending, and slightly convex towards the end, the ridge convex, narrowed towards the point, the sides nearly erect, convex, the edges sharp and considerably inflected; the tip narrow; nasal groove rather long, feathered at the base. Nostrils basal, linear, direct, pervious; lower mandible with the angle extremely narrow and extending beyond the middle, the dorsal line straight and sloping towards the point, the ridge convex and narrow, the edges sharp and involute, the tip attenuated. Head of moderate size or rather large, oblong, narrowed before; neck rather long and thick; body elongated, much depressed. Feet short, rather large, placed very far back; tibia almost entirely concealed; tarsus short, exceedingly compressed, sharp-edged before and behind, covered all over with reticulated scales; toes four, hind toe extremely small, connected with the second by a very small membrane; anterior toes united by entire membranes, the outer longest, the third a little shorter, all scutellate. Claws very small, depressed, blunt. Plumage short and dense, the feathers in general oblong. Wings very small and narrow, curved, first quill longest, secondaries broad and rounded. Tail extremely short, rounded, of more than twelve feathers. Tongue long, trigonal, tapering; œsophagus very wide; proventriculus extremely dilated; stomach rather large, roundish, a little compressed, moderately muscular, with a rather thick, dense, longitudinally rugous epithelium; intestine rather long and wide; cœca rather long and wide; cloaca globular.



Great Northern Diver Loon
1 Adult 2 Young in Winter

Drawn from Nature by J. J. Audubon FRSELS

Lith. Printed & Col'd by J. T. Bowen, Philad.

GREAT NORTHERN DIVER OR LOON.

COLYMBUS GLACIALIS, *Linn.*

PLATE CCCCLXXVI.—ADULT MALE AND YOUNG MALE.

The Loon, as this interesting species of Diver is generally called in the United States, is a strong, active, and vigilant bird. When it has acquired its perfect plumage, which is not altered in colour at any successive moult, it is really a beautiful creature; and the student of Nature who has opportunities of observing its habits, cannot fail to derive much pleasure from watching it as it pursues its avocations. View it as it buoyantly swims over the heaving billows of the Atlantic, or as it glides along deeply immersed, when apprehensive of danger, on the placid lake, on the grassy islet of which its nest is placed; calculate, if you can, the speed of its flight as it shoots across the sky; mark the many plunges it performs in quest of its finny food, or in eluding its enemies; list to the loud and plaintive notes which it issues, either to announce its safety to its mate, or to invite some traveller of its race to alight, and find repose and food; follow the anxious and careful mother-bird, as she leads about her precious charge; and you will not count your labour lost, for you will have watched the ways of one of the wondrous creations of unlimited Power and unerring Wisdom. You will find pleasure too in admiring the glossy tints of its head and neck, and the singular regularity of the unnumbered spots by which its dusky back and wings are checkered.

I have met with the Great Diver, in winter, on all the water-courses of the United States, whence, however, it departs when the cold becomes extreme, and the surface is converted into an impenetrable sheet of ice. I have seen it also along the whole of our Atlantic coast, from Maine to the extremity of Florida, and from thence to the mouths of the Mississippi, and the shores of Texas, about Galveston Island, where some individuals in the plumage characteristic of the second moult, were observed in the month of April, 1837. Indeed, as is the case with most other species of migrating birds, the young remove farther south than the old individuals, which are better able to withstand the cold and tempests of the wintry season.

The migratory movements of this bird seem to be differently managed in the spring and autumn. In the latter case, a great number of young Loons

are seen to alight on the head waters of our great streams, on which, without much exertion, being aided by the current, they float along, diving at intervals in pursuit of the numerous fishes, as they proceed toward milder climes. The few old birds which, at a later date, appear on the same water-courses, frequently take to wing, and shorten their way by flying at a considerable elevation, directly across the great bends or peninsulas. These modes of travelling are also adopted by those which advance along the Atlantic coasts, where, indeed, the birds have the double advantage of meeting with food and obtaining repose, on the rivers and on the sea. I think, however, that this maritime course is followed only by such of the Loons as have bred in the more immediate vicinity of the coast. But whether you are in the interior, or on the coast, it is seldom that you see at a time more than one Loon travelling at this season; whereas in spring, they proceed in pairs, the male taking the lead, as is easily ascertained by observing that the bird in the rear is the smallest.

Although its wings are rather small, its flight is strong and rapid, so that it is enabled to traverse a large extent of country on wing. When travelling, or even when only raised from its nest, it moves through the air with all the swiftness of the other species of its tribe, generally passing directly from one point to another, however distant it may be. Its long transits are at times performed at so great an elevation, that its form can scarcely be distinguished, and yet, even then, in calm weather, the noise of its wings striking the air comes distinctly on your ear. I have seen them thus, on their way towards Labrador, passing over the head waters of the Bay of Fundy, to cross the Gulf of St. Lawrence. Whenever it chances to alight on the water, in the course of its long journeys, it almost immediately dives, as if to taste the water, and judge whether it contains food suited to its appetite. On emerging, and after having somewhat raised the fore part of its body, shaken its wings, and by a strong shiver re-arranged its plumage, it emits its loud echoing call-note, to induce perchance some traveller of its tribe to alight for awhile, that they may communicate to each other their experience of the past, or their hopes of the future. There is an absurd notion entertained by persons unacquainted with the nature of this bird, that its plaintive cries are a sure indication of violent storms. Sailors, in particular, are ever apt to consider these call-notes as portentous. In the course of a voyage from Charleston to the Florida Keys, in May 1832, I several times saw and heard Loons travelling eastward; but notwithstanding all the dire forebodings of the crew, who believed that a hurricane was at hand, our passage was exceedingly pleasant. Although I have heard the notes of the Loon in rainy and blowy weather, yet I never heard them so frequent or so loud both by day and by night, as on the Ohio, during that

delightful and peculiarly American autumnal season, called the Indian summer; when, although not so much as a cloud was seen for weeks, I have frequently observed the passing birds checking their flight, or heard the murmuring plash which they produced on alighting upon the placid water, to rest and refresh themselves.

Another strange notion, not deserving of credit, although you will find it gravely announced in books, is that, when the Loon is breeding, it will dart down suddenly from the air, and alight securely in its nest. I have never witnessed such a procedure, although I have closely watched, from under cover, at least twenty pairs. On such occasions I have seen the incubating bird pass over the dear spot several times in succession, gradually rounding and descending so as at last to alight obliquely on the water, which it always did at a considerable distance from the nest, and did not approach it until after glancing around and listening attentively, as if to assure itself that it was not watched, when it would swim to the shore, and resume its office.

The Loon breeds in various parts of the United States, from Maryland to Maine. I have ascertained that it nestles in the former of these States, on the Susquehanna river, as well as in the districts between Kentucky and Canada, and on our great lakes. Dr. RICHARDSON states that it is found breeding as far north as the 70th degree of latitude. The situation and form of the nest differ according to circumstances. Some of those which breed in the State of Maine, place it on the hillocks of weeds and mud prepared by the musk-rat, on the edges of the lakes, or at some distance from them among the rushes. Other nests, found on the head waters of the Wabash river, were situated on the mud, amid the rank weeds, more than ten yards from the water. Authors have said that only one pair breed on a lake; but I have found three pairs, with their nests, on a pond not exceeding a quarter of a mile in length, in the State of Maine. One that I saw after the young had left it, on Cayuga Lake, in 1824, was almost afloat, and rudely attached to the rushes, more than forty yards from the land, though its base was laid on the bottom, the water being eight or nine inches deep. Others examined in Labrador were placed on dry land, several yards from the water, and raised to a height of nearly a foot above the decayed moss on which they were laid. But in cases when the nest was found at any distance from the water, we discovered a well beaten path leading to it, and very much resembling those made by the beaver, to which the hunters give the name of "crawls." The nest, wherever placed, is bulky, and formed of the vegetable substances found in the immediate vicinity, such as fresh or withered grasses and herbaceous plants. The internal part, or the true nest, which is rarely less than a foot, and is sometimes fifteen inches, in diameter, is raised upon the external or inferior mass to the height of seven or eight inches.

Such was one found on the 5th July, 1835, in Labrador, and which was placed within three yards of the edge of a considerable pond of limpid water, supposed to have been produced by the melting of the snow, and upwards of a mile distant from the sea. Of the many nests which I have examined, I have found more containing three than two eggs, and I am confident that the former number is that which more frequently occurs, although many European, and some American writers, who probably never saw a nest of this bird, allege the contrary. The eggs average three inches and three quarters in length, by two inches and a quarter in their greatest breadth, and thus are considerably elongated, being particularly narrowed from the bulge to the smaller end, which is rather pointed. They are of a dull greenish-ochry tint, rather indistinctly marked with spots of dark umber, which are more numerous toward the larger extremity. The weight of two of these eggs, containing young nearly ready to emerge, was ten ounces and a half. In Maine the Loon lays fully a month earlier than in Labrador, and about the same period as on the Wabash.

On approaching the female while sitting on her eggs, I assured myself that she incubates with her body laid flat upon them, in the same way as the domestic Duck, and that, on perceiving the intruder, she squats close, and so remains until he is almost over her, when she springs up with great force, and makes at once for the water, in a scrambling and sliding manner, pushing herself along the ground. On gaining the water, she dives at once, emerges at a great distance, and very rarely suffers herself to be approached within gunshot. Sometimes they swim so deeply immersed as scarcely to be perceptible, and keep as much as possible among the rushes and other water plants. When the eggs are on the eve of being hatched, the mother, when disturbed, often cries loudly and dismally for some time, but seldom flies off. At other times, when I found the eggs to have been recently laid, the bird, on reaching the water, and diving, swam lightly, flapping its wings, drank once or twice, and moved about at a respectful distance. On such occasions, should you persist in watching it, it rises on wing and flies off. Should you not mark the spot in which the nest is, but leave it to go in pursuit of the bird, you may search for hours before finding it, for the path leading from the water to it is generally covered over by the herbage. Once while approaching a spot in which I knew a Loon to be engaged in forming her nest, I was disappointed at not finding her at work: her keen sense of hearing had apprised her of my purpose, and cunningly must she have slipped away, for, on finding her absent, although I had not heard any noise, I happened to look toward the water, and there she was, gliding off in the quiet manner usual on such occasions.

The young of the Loon are covered at birth with a kind of black stiff

down, and in a day or two after are led to the water by their mother. They swim and dive extremely well even at this early stage of their existence, and after being fed by regurgitation for about a fortnight, receive portions of fish, aquatic insects, and small reptiles, until they are able to maintain themselves. During this period, grey feathers appear among the down of the back and belly, and the black quill-feathers of the wings and tail gradually elongate. They are generally very fat, and so clumsy as to be easily caught on land, if their retreat to the water be cut off. But should you miss your opportunity, and the birds succeed in gaining the liquid element, into which they drop like so many terrapins, you will be astonished to see them as it were run over the water with extreme celerity, leaving behind them a distinct furrow. This power of traversing the surface of the water is possessed, not only by the young and old of this species, but by all other kinds of swimmers, including even Gallinules and Coots. When the young are well able to fly, the mother entices them to remove from the pond or lake on which they have been bred, and leads them on wing to the nearest part of the sea, after which she leaves them to shift for themselves. Now and then, after this period, the end of August or beginning of September, I have still seen the young of a brood, two or three in number, continuing together until they were induced to travel southward, when they generally set out singly.

Having given you a figure of a young bird, taken in October, 1819, from a specimen obtained on the Ohio, I will not here trouble you with its description, but merely state that the young undergo their first moult in December, when they are seen singularly patched with portions of new plumage beautifully speckled with white, on a bed of almost uniform ash-brown. I was told, while in the State of Maine, that if the young were caught soon after being hatched, and before they had been in the water, they would, if thrown into it, immediately follow a paddled canoe anywhere; but, as I have not myself made the experiment, I cannot speak of this as a fact.

Although it has been generally asserted that Loons cannot walk or run in an efficient manner, I feel assured that on emergency the case is very different. An instance which occurred to my youngest son, JOHN WOODHOUSE, who accompanied me to Labrador, may here be related. One day, when he was in pursuit of some King Ducks, a Loon chanced to fly immediately over him within shooting-distance of his enormous double-barrelled gun. The moment was propitious, and on firing he was glad to see the bird fall broken-winged on the bare granitic rocks. As if perfectly aware of its danger, it immediately rose erect on its feet, and inclining its body slightly forward, ran on, stumbled, rose again, and getting along in this manner actually reached the water before my son, who is by no means slow

of foot. The space traversed was fully a hundred yards, and the water to an equal distance was not more than ankle-deep. The bird and its pursuer ran swiftly through the water, and just as both reached a sudden break about four feet in depth, the Loon, which had been wounded elsewhere than in the wing, expired and floated at the disposal of its enemy, who brought it on board the Ripley ; when I entered this anecdote in my journal.

These birds are so very strong and hardy that some of the old ones remain in Maine and Massachusetts until all the fresh waters are frozen, first leaving the quiet lakes and ponds, then the slow streams, and lastly the turbulent pools below waterfalls, which latter they do not quit until they are overhung by icicles and deserted of fish. On the other hand, this species returns northward at a later period than most others that breed in high latitudes. I have witnessed the arrival of some on the coast of Labrador, after they had crossed the Gulf of St. Lawrence, as late as the 20th of June, after which they had scarcely four months to seek out a breeding place, lay their eggs, hatch and rear their young, and with them remove southward, before the rigour of winter commenced.

The Great Northern Diver is a heavy-bodied bird, and generally swims rather deep in the water, more especially if apprehensive of immediate danger, when scarcely more than two inches in height of its back can be seen above the surface. As its body is more flattened than that of the Cormorant, this circumstance might seem to favour the action in question ; but other species less depressed exhibit the same peculiarity ; and I have thought that in all of these the internal structure alone can account for this peculiar faculty.

With the exception of that most expert of all Divers, the Anhinga, and the Great Auk, the Loon is perhaps the most accomplished. Whether it be fishing in deep water amid rolling billows, or engaged in eluding its foes, it disappears beneath the surface so suddenly, remains so long in the water, and rises at so extraordinary a distance, often in a direction quite the reverse of that supposed to be followed by it, that your eyes become wearied in searching for it, and you renounce the wish of procuring it out of sheer vexation. At least, this has very frequently happened to me ; nay, I have at times abandoned the chase when the bird was so severely wounded as to be obliged to dive immediately beside my boat, and had it not died of exhaustion and floated near enough to be seized by me, I felt as if I could not have pulled my oars any longer, and was willing to admit that I was outdone by a Loon.

In Labrador, where these birds were abundant, my son JOHN one day shot at one on wing, which fell upon the water to appearance quite dead, and remained on its back motionless until we had leisurely rowed to it, when a

sailor put out his hand to take it up. The Loon, however, to our surprise, suddenly sprung up, and dived, and while we stood amazed, watching its appearance, we saw it come up at the distance of about a hundred yards, shake its head, and disgorge a quantity of fish mixed with blood ; on which it dived again, and seemed lost to us. We rowed however to the spot in all haste, and the moment it rose, sent another shot after it, which terminated its career. On examining it afterwards, we found it quite riddled by the heavy shot.

If ever so slightly wounded, the Loon prefers diving to flying off, and all your endeavours to kill it are almost sure to prove unavailing. You may shoot at it under such circumstances, but you will lose both your time and your ammunition. Its keenness of sight defies the best percussion-locked gun, for it is generally deep in the water before the shot reaches the spot where it has been. When fatigued with diving in the ordinary manner, it will sink backwards, like a grebe or a frog, make for some concealed spot among the rushes, and there lie until your eyes ache with searching, and your stomach admonishes you of the propriety of retiring.

Loons are now and then caught in fishermen's nets, and are soon drowned. I have also caught them with hooks fastened to lines laid across the Ohio, but on no such occasion have I taken the bird alive. A method of shooting these birds, which I have often practised, and which was several times successfully employed by our Labrador party, may here be related. On seeing a Loon on the water, at whatever distance, the sportsman immediately places himself under the nearest cover on the shore, and remains there as carefully concealed as possible. A few minutes are allowed to pass, to give the wary and sharp-sighted bird all due confidence ; during which time the gun, charged with large shot, is laid in a convenient position. The gunner then takes his cap or pocket-handkerchief, which if brightly coloured is so much the better, and raising it in one hand, waves it three or four times, and then suddenly conceals it. The bird commonly detects the signal at once, and, probably imagining the object thus exhibited to be one of its own species, gradually advances, emitting its love-notes, which resemble a coarse laugh, as it proceeds. The sportsman imitates these notes, making them loud and yet somewhat mellow, waving his cap or kerchief at the same time, and this he continues to do at intervals. The Loon, in order to arrive more quickly, dives, perhaps rises within fifty yards of him, and calling less loudly, advances with considerable caution. He shews the signal less frequently, imitates the notes of the bird more faintly, and carefully keeps himself concealed, until the Loon, having approached within twenty or even ten paces, dives, and on emerging raises itself up to shake its wings, when off goes the shot, and the deluded bird floats dead on the water. Many species

of Ducks are procured in nearly the same manner. The male Turkey, in the gobbling season, and the stag in autumn, may also be drawn within shot by the same means. I once "tolled" two Loons with my hat from a distance of nearly half a mile, and although they were at one time so near to me that I could clearly perceive the colour of their eyes, I had no sure opportunity of firing at them, as it was in the pairing season, and they never once dived, or raised their wings to flap them, so that, knowing the extreme agility with which they disappear when they have heard a gun snap, I judged it useless to shoot. Until my visit to Labrador I had supposed, agreeably to the common belief, that the loons always repose at night on the water, which, however, I have since assured myself they rarely if ever do.

Colonel MONTAGU, than whom none has written more correctly on the habits of the birds of Great Britain, having procured a wounded Loon, placed it in a pond, and observed the manner in which it made its way under the surface of the water. "In swimming and diving," he remarks, "only the legs are used and not the wings, as in the Guillemot and Auk tribes, and by their position so far behind, and their little deviation from the line of the body, the bird is enabled to propel itself in the water with great velocity, in a straight line, as well as turn with astonishing quickness." This I have no doubt was the case with the individual observed; but that this is not the usual mode of proceeding of the species is equally true. Having myself seen Loons pass and repass under boats, at the distance of several feet from the surface, and propel themselves both with their feet, and their half-extended wings, I am inclined to believe that when not wounded, and when pursuing their prey, they usually employ all the limbs.

My friend THOMAS NUTTALL, who kept one for some time, gives the following account of its manners while in his possession. "A young bird of this kind which I obtained in the Salt Marsh at Chelsea Beach, and transferred to a fish-pond, made a good deal of plaint, and would sometimes wander out of his more natural element, and hide and bask in the grass. On these occasions he lay very still until nearly approached, and then slid into the pond and uttered his usual plaint. When out at a distance he made the same cautious efforts to hide, and would commonly defend himself in great anger, by darting at the intruder, and striking powerfully with his dagger-like bill. This bird, with a pink-coloured iris, like albinos, appeared to suffer from the glare of broad day-light, and was inclined to hide from its effects, but became very active towards the dusk of the evening. The pupil of the eye in this individual, like that of nocturnal animals, appeared indeed dilatable; and the one in question often put down his head and eyes into the water to observe the situation of his prey. This bird was a most expert and indefatigable diver, and remained down sometimes for several minutes,

often swimming under water, and as it were flying with the velocity of an arrow in the air. Though at length inclining to become docile, and shewing no alarm when visited, it constantly betrayed its wandering habits, and every night was found to have waddled to some hiding place, where it seemed to prefer hunger to the loss of liberty, and never could be restrained from exercising its instinct to move onwards to some secure or more suitable asylum."

The same valued friend has corroborated the result of my observations respecting the number of eggs usually laid by this species, by stating as follows: "About the 11th of June, through the kindness of Dr. J. W. HARRIS, I received three eggs, which had been taken from the nest of a Loon, made in a hummock, or elevated grassy hillock, at Sebago Pond, in New Hampshire."

The range of this species is immense. It occurs on the waters that fall into the Pacific Ocean, and has been observed on the Columbia river. In the Fur Countries it is plentiful; and, as I have already stated, it breeds in many parts of the United States. It is found equally in Europe, and the northern parts of Asia. In all these countries it moves southward on the approach of winter, and returns when the mild weather commences in spring.

Unlike the Cormorant, the Loon usually swallows its food under the water, unless when it happens to bring up a shell-fish or a crustaceous animal, which it munches for awhile before it swallows it. Fishes of numerous kinds, aquatic insects, water-lizards, frogs and leeches, have been found by me in its stomach, in which there is also generally much coarse gravel, and sometimes the roots of fresh-water plants.

Although the flesh of the Loon is not very palatable, being tough, rank, and dark-coloured, I have seen it much relished by many lovers of good-living, especially at Boston, where it was not unfrequently served almost raw at the table of the house where I boarded.

A female bird particularly examined by me presented the following appearances. From the point of the bill to the end of the tail it measured 34 inches; to the claws 41; the extended wings were 71; the bill measured 5 inches along the gap; the breadth of the body was 8 inches, its depth only four; the wings were 2 inches shorter than the tail; and the weight was 10 lbs. 11 oz. avoirdupois. The first primary was longest. The trachea, which was even and flattened, being in diameter about $\frac{5}{8}$ of an inch by $\frac{1}{2}$ inch, was 16 inches long. The eggs were numerous. The gizzard was moderate, and contained many large pebbles. The intestines were 7 feet long, and about the same size as a Swan's quill. Every bone and sinew was strong and tough. The tongue resembled in shape and size that of the Ivory-billed Woodpecker. The bones of the wing and leg were almost solid, the cavity

for the marrow being very small. All the bones of this specimen were presented to Mr. THOMAS ALLIS, of the Friends' Retreat, near York.

My friend Captain JAMES CLARK ROSS, of the Royal Navy of England, once placed at my disposal a specimen of the Loon procured in a very high latitude, and which, having closely inspected it, I found to differ from the one represented in the plate, only in having the point of the bill slightly elevated or recurved, and of a fine yellow tint. Dr. RICHARDSON informed me that, on one of his arduous northern journeys, he saw a very large and handsomely crested Diver, which, although somewhat prematurely, I propose honouring with the name of *Colymbus Richardsoni*.

GREAT NORTHERN DIVER or LOON, Wils. Amer. Orn., vol. ix.

COLYMBUS GLACIALIS, Bonap. Syn., p. 420.

COLYMBUS GLACIALIS, *Great Northern Diver*, Swains. and Rich. F. Bor. Amer., vol. ii. p. 474.

LOON or GREAT NORTHERN DIVER, Nutt. Man., vol. ii. p. 513.

GREAT NORTHERN DIVER or LOON, *Colymbus glacialis*, Aud. Orn. Biog., vol. iv. p. 43.

Adult, 32 $\frac{1}{2}$, 57 $\frac{1}{2}$. Young Male, in winter, 31 $\frac{1}{4}$, 54 $\frac{1}{4}$.

During winter dispersed over the United States, in Texas, as well as along the coasts of the Atlantic, and the north-west. Breeds from Massachusetts northward to very high latitudes. Common.

Adult Male.

Bill as long as the head, straight, stout, much compressed, tapering to a point. Upper mandible with the dorsal line descending and slightly convex towards the end, the ridge convex, narrowed towards the point, the sides convex beyond the nostrils, the edges sharp and considerably inflected, the tip narrow and sharpish. Nasal groove short, nostrils basal, linear, direct, pervious. Lower mandible with the angle extremely narrow, and extending beyond the middle, the dorsal line straight and sloping upwards to the point, the ridge convex and narrow, the edges sharp and involute; the tip attenuated.

Head of moderate size, oblong, narrowed before. Neck rather long and thick. Eyes of moderate size. Body elongated, much depressed, of an elliptical form viewed from above. Wings small. Feet short, rather large, placed very far back; tibia almost entirely concealed; tarsus short, exceedingly compressed, sharp-edged before and behind, covered all over with reticulated angular scales; hind toe extremely small, connected with the second by a very small membrane; the anterior toes united by articulated membranes, the fourth or outer longest, the third a little shorter, the second considerably shorter than the third, all covered above with very numerous

narrow scutella, the second toe with a free two-lobed membrane; claws very small, depressed, blunt.

Plumage short and dense; of the head and neck very short, and blended; of the lower parts blended, short, with slight gloss; of the upper compact, glossy; the feathers in general oblong, those of the upper parts with the extremity abrupt. Wings proportionally very small and narrow, curved; primaries strong, tapering, the first longest, the second almost as long, the rest rapidly graduated; secondaries broad, and rounded. Tail extremely short, rounded, of twenty feathers.

Bill black. Iris deep bright red. Feet, tarsi, and toes, of a livid greyish-blue, their inner sides tinged with pale yellowish flesh-colour; claws black, lighter at the base; webs brownish-black, lighter in the middle. Head and neck dark greenish-blue, with purple reflections. On the throat a small transverse patch of white, longitudinally striated with dusky; about the middle of the neck, two large patches of the same, separated in front to the distance of an inch, behind continuous, but when the feathers are laid close, appearing as if separated by a longitudinal dark band about half an inch in breadth. The under parts glossy white, excepting the feathers on the sides under the wing, which are black, each with two, three, or four elliptical white spots, a faint dusky band across the vent, the lower tail coverts, which are brownish-black tipped with white, and the axillar feathers and larger wing-coverts, which have a dusky streak along the middle. The sides of the neck at its lower part are longitudinally streaked with black and white, there being two oblong spots of the latter on each feather towards the end. The upper parts are glossy black, variegated with spots of white in regular transverse slightly-curved lines having the convexity backwards. These spots vary in form and size, being small and roundish towards the neck and sides, larger and somewhat four-sided along the middle of the back: largest and rectangular on the scapulars, very small and roundish on the hind part of the back and tail-coverts. The upper part of the wing is similar, with smallish spots; the alula and quill brownish-black, a few of the inner secondaries only having two white spots at their extremity. Tail brownish-black, paler at the tip.

	Adult Male.	Adult Male.	Young.
Length to the end of tail,	32 $\frac{3}{4}$	36	31 $\frac{1}{4}$
. claws,	39 $\frac{1}{4}$	40 $\frac{1}{2}$	36
. wings,	31 $\frac{1}{4}$	—	29 $\frac{3}{4}$
. carpal joint,	16 $\frac{3}{4}$	—	16 $\frac{1}{4}$
Extent of wings,	37 $\frac{1}{2}$	52	54 $\frac{1}{2}$
Wing from flexure,	15 $\frac{1}{2}$	—	14 $\frac{1}{2}$

Depth of body,	—	6	—
Breadth,	—	9½	—
Bill along the ridge,	—	3¼	—
Gap-line,	—	4½	—
Tarsus,	—	3⅓	—
Hind toe,	—	9½	—
Its claw,	—	⅓	—
Outer toe and claw,	—	4½	—
Middle toe,	—	4¼	—
Inner toe,	—	3⅓	—
Tail,	—	29½	—
Wing from flexure,	—	14½	—
Weight,	8¾	8½	9

The female is generally smaller, but in all other respects resembles the male. Weight 10 lbs. 11 oz.

Young in winter.

Bill pale yellowish-green, the ridge and tip of the upper mandible dusky. Iris brown. Feet dusky externally, pale yellowish flesh-colour internally, webs dusky, but yellow in the middle. Claws yellowish-brown. All the upper parts are of a uniform dark greyish-brown, each feather margined with lighter, the lower parts white; the sides of the neck at the lower part whitish, streaked with dusky; the sides dusky, without spots.

Towards spring the eye assumes a redder tint, and the plumage of the upper parts gradually becomes spotted with white; and when the moult is completed about the end of summer, the plumage is as in the adult, although the tints are improved at each successive moult for several years.

A fine male killed at Boston, 34 inches in length, with an alar extent of 56, presents the following characters. There is a general layer of subcutaneous adipose tissue, and the skin is very tenacious. The external aperture of the ear roundish, very small, having a diameter of only 2 lines. The tongue is two inches 1 line in length, fleshy, as high as broad, slightly concave and longitudinally grooved above, tapering to a horny point. On the palate are six rows of papillæ; the posterior aperture of the nares is linear, 2½ inches in length. The aperture of the glottis is ½ an inch long, with numerous papillæ along its sides and behind. The pharynx is extremely dilatable, as is the œsophagus, which is 17 inches long, passes along the right side of the neck, together with the trachea, and when distended has an average diameter of 2½ inches, but on entering the thorax contracts to 1½. The structure of the œsophagus in birds may be very conveniently examined in this species, the different layers being remarkably developed in it. Properly speaking, it has only two coats,—the outer muscular, its external

layer composed of transverse or circular fibres, the internal of equally distinct longitudinal fibres, which are not straight, but irregularly undulated. The inner, or mucous coat, when contracted, falls into longitudinal plaits. The proventriculus is $2\frac{3}{4}$ inches long, the glandules large, roundish, simple, and disposed in a continuous belt. Over this part, the transverse muscular fibres are remarkably developed. The right lobe of the liver is $5\frac{3}{4}$ inches long, the left lobe $5\frac{1}{2}$. The heart is very large, of a broadly conical form, 3 inches long, $2\frac{3}{4}$ inches in breadth. The stomach is three inches long, $2\frac{1}{2}$ in breadth of an elliptical form, a little compressed; its lateral muscles 9 lines in thickness, and composed of strong large fasciculi; the tendons $1\frac{1}{2}$ inches in diameter; the cuticular lining thick, its upper and lower parts marked with strong longitudinal ridges having numerous transverse fissures; the grinding surfaces irregularly wrinkled, with a deep fissure down the middle of each. The pylorus is 8 lines in diameter when distended, and is destitute of valve, but has a strong prominent rim. In the stomach were remains of fishes, and some pebbles, chiefly quartz, the largest 4 lines long. The intestine measures 6 feet 6 inches in length, and varies in diameter from 8 to 6 lines. The rectum is $3\frac{1}{2}$ inches long, the cloaca extremely large, forming a cavity about 3 inches in diameter. The cœca are $1\frac{3}{4}$ inches long, cylindrical, rounded at the extremity; one of them 7 lines, the other 9 lines, in diameter.

The trachea, when moderately extended, measures $13\frac{1}{2}$ inches in length, inconsiderably depressed, its transverse diameter at the upper part $9\frac{1}{2}$ lines, at the lower $6\frac{1}{2}$ lines; the rings cartilaginous, of moderate breadth, uniform, with a contraction in the middle before and behind, their number 134, the four lowest united. The bronchi are composed of about 20 narrow cartilaginous half rings. The contractor muscles are very broad, but thin, their fibres irregularly disposed in front; they become thicker and narrower toward the lower part, and are continued beyond the sterno-tracheal muscles, which come off from the 20th ring from the inferior larynx, to the membrane between the last tracheal and first bronchial ring.

BLACK-THROATED DIVER.

COLYMBUS ARCTICUS, *Linn.*

PLATE CCCCLXXVII.—MALE, FEMALE, AND YOUNG.

One of the most remarkable circumstances relative to this beautiful bird, which is intermediate between the Red-throated Diver and the Loon, is the extraordinary extent to which the wanderings of the young are carried in autumn and winter. It breeds in the remote regions of the north, from which many of the old birds, it would seem, do not remove far, while the young, as soon as they are able to travel, take to wing and disperse, spreading not only over the greater part of the United States, but beyond their south-western limits. In Texas I saw individuals of this species as late as the middle of April 1837; and I find it enumerated in a list of the birds observed by Mr. J. K. TOWNSEND on the Columbia river, where he also met with *Colymbus glacialis*. Its ramblings over a considerable portion of northern and eastern Europe have equally been noted, and it has been found breeding in the extreme north of Scotland.

For many years I knew the young of this bird only by the name "Imber Diver," applied by BEWICK to that of another species, and now have pleasure in looking upon a drawing of mine, made about thirty years ago, with that appellation attached to it. Very few old birds in full plumage have been procured within the limits of the United States, and none, in as far as I know, farther south than the Capes of Delaware.

No sooner has the foliage of the trees that border our western waters begun to drop and float on the gentle current of the fair Ohio, than the Black-throated Diver makes its appearance there, moving slowly with the stream. The Mississippi, Missouri, and their tributaries, are at the same period supplied with these birds. Along our eastern and southern shores they are seen from the end of autumn until spring.

Whilst in Labrador, I saw a few pairs courting on wing, much in the manner of the Red-throated Diver; but all our exertions failed to procure any of the nests, which I therefore think must have been placed farther inland than those of the Loon or Red-throated Diver. I observed, however, that in their general habits they greatly resemble those species, for on alighting on the water, they at once immerse their bills, as if for the purpose



Black-throated Diver.
1 Male. 2 Female. 3 Young in Oiler.

of ascertaining whether it yields a supply of suitable food, and afterwards raise themselves and beat their wings.

This species has almost as powerful a flight as the Great Northern Diver or Loon, and I think shoots through the air with even greater velocity. When flying it moves its wings rapidly and continuously, and has the neck and feet stretched out to their full length. I well recollect that while I was standing near the shore of a large inlet in South Carolina, one of these birds, being shot while passing over my head at full speed, did not, on account of the impetus, reach the ground until upwards of twenty yards beyond me. They are equally expert at diving, and fully as much so in eluding the pursuit of their enemies when wounded. I saw my friend Mr. HARRIS bring down one from on wing, on which NAPOLEON COSTE, and WILLIAM TAYLOR, captains of the revenue cutter and tender of which we had the use, paddled in pursuit of it in a light canoc; but, although they advanced with all the address of Indians, they proved unsuccessful, for after following it both in the Bay of Cayo Island, and in the Gulf of Mexico, for nearly an hour, they were obliged to return without it, having found it apparently not in the least fatigued, although it had dived sufficiently often to travel above two miles, shifting its course at each immersion. It is curious to observe how carefully these birds avoid the danger of sudden storms or heavy gales. On such occasions, I have seen Divers at once seek the lee of rocks, islands, or artificial embankments, where they could not only remain in security, but also procure their accustomed food. At other times, when striving against the tempest, they dive headlong from on wing, and are sure to reappear in the smooth parts which sailors term the trough.

I once caught one of these birds on the Ohio, it having been incapacitated from diving by having swallowed a large mussel, which stuck in its throat. It was kept for several days, but refused food of every kind, exhibited much bad humour, struck with its bill, and died of inanition. The food of this species consists of fish, aquatic reptiles, testaceous mollusca, and all sorts of small crustaceous animals. Its flesh resembles that of the Loon, and is equally unfit to be eaten.

The eggs, which are sometimes two, more frequently three, average three inches in length, by two in their greatest breadth, which is about a third of the whole length distant from the extremity. Their form is that of the Red-throated Diver, which however they exceed in size. The shell is rather thick, the surface roughish, the ground colour chocolate tinged with olive, sparingly spotted at the larger end with very dark umber and black, and sprinkled all over with very small dots of the same colour.

I have represented an adult male, a female, and a young bird.

COLYMBUS ARCTICUS, Bonap. Syn., p. 420.

COLYMBUS ARCTICUS, *Black-throated Diver*, Swains. and Rich. F. Bor. Amer., vol. ii. p. 475.

BLACK-THROATED DIVER, Nutt. Mann., vol. ii. p. 517.

BLACK-THROATED DIVER, *Colymbus arcticus*, Aud. Orn. Biog., vol. iv. p. 345.

Male, 29, 39½.

The young range throughout the interior and along the coast as far as Texas, in autumn and winter. Adult in full plumage very rare. Breeds in high latitudes. Columbia river.

Adult Male.

Bill as long as the head, straight, stout, higher than broad at the base, much compressed toward the end, and tapering to a point. Upper mandible with the dorsal line descending and considerably convex toward the end, the ridge convex, narrowed toward the point, the sides convex beyond the nostrils, the edges involute for half their length in the middle, direct at the base and toward the end, the tip narrow and sharpish. Nasal groove rather long and narrowed; nostrils sub-basal, linear, direct, pervious. Lower mandible with the angle extremely narrow, and very long, the dorsal line ascending and very slightly convex, the ridge convex and narrow, the edges sharp and involute, the tip attenuated.

Head of moderate size, oblong, narrowed before. Neck rather long and thick. Eyes of moderate size. Body elongated, much depressed, of an elliptical form viewed from above. Wings small. Feet short, rather large, placed very far back; tibia almost entirely concealed; tarsus short, exceedingly compressed, sharp-edged before and behind, covered all over with reticulated angular scales, hind toe extremely small, externally marginate, connected with the second for half its length by a membrane, which extends, narrowing, to the end; the anterior toes connected by articulated membranes, the fourth or outer longest, the third a little shorter, the second considerably shorter than the third; all covered above with numerous narrow scutella; the second toe with a free two-lobed membrane, the claws very small, depressed, blunt.

Plumage short and dense, of the head and neck very short, soft and blended; of the lower parts short, blended, stiffish, considerably glossed; of the upper compact, glossy; the feathers on the lower part of the sides of the neck much incurved, oblong, with the terminal barbs stiff; those of the fore part of the back and the scapulars straight, oblong, abrupt. Wings proportionally very small and narrow, curved; primaries strong, tapering, the first longest, the second slightly shorter, the rest rapidly graduated; secondaries very short, broad, and rounded. Tail extremely short, rounded, of eighteen feathers.

Bill black. Iris deep bright red. Feet greyish-blue, their inner sides tinged with yellow; claws black, that of the inner toe yellowish at the base. The upper part of the head and the hind neck are light grey or hoary, the fore part and sides of the head darker. The upper parts are glossy black, tinged with green anteriorly, and shaded with brown behind. On the fore part of the back are two longitudinal bands of transverse white bars, the feathers being tipped with that colour; the scapulars, excepting the outer, are marked in the same manner with transverse rows of rather large square spots. Most of the wing-coverts have two roundish spots of white near the end. The quills are blackish-brown, tinged with grey externally, paler on the inner webs; the tail also blackish-brown. The fore neck, to the length of six and a half inches, is purplish-black, ending angularly below, and with a transverse interrupted band of linear white spots near the upper part; beyond which the sides of the neck are blackish-brown, with several longitudinal white streaks, formed by the edges of the feathers; on the lower part of the neck a broad space is occupied by these longitudinal, dusky, and white streaks, the former of which gradually become-narrow. The lower parts are pure white, excepting a longitudinal band on the sides under the wing, which is dusky.

Length to end of tail 29 inches, to end of wings $27\frac{1}{2}$, to end of claws 33; extent of wings $39\frac{1}{2}$; wing from flexure $12\frac{3}{4}$; tail $2\frac{3}{4}$; bill along the ridge $2\frac{5}{12}$, along the edge of lower mandible $3\frac{4}{12}$; tarsus $3\frac{1}{12}$; hind toe $\frac{8}{12}$, its claw $\frac{2}{12}$; second toe $3\frac{2}{12}$, its claw $\frac{5}{12}$; third toe $3\frac{8}{12}$, its claw $5\frac{5}{12}$; fourth toe $4\frac{1}{4}$, its claw $\frac{1}{12}$.

Adult Female.

The female is smaller than the male, but is similarly coloured.

Young in winter.

The texture of the plumage is less dense, the feathers on the neck being more downy, and those of the back oblong and rounded. The bill is light bluish-grey, dusky along the ridge; the iris brown; the feet more dusky. The upper part of the head and the hind neck are dark greyish-brown; the sides of the head greyish-white, minutely streaked with brown. The upper parts have a reticulated or scaly appearance, the feathers being brownish-black, with broad bluish-grey margins; the rump dull brownish-grey. The primaries and their coverts are brownish-black, the secondaries and tail-feathers dusky, margined with grey. The fore part of the neck is greyish-white, minutely and faintly dotted with brown, its sides below streaked with the same; the lower parts, including the under surface of the wing, pure white; the sides of the body and rump, with part of the lower tail-coverts, dusky, edged with bluish-grey.

When in their first downy plumage, the young are of a uniform brownish-black colour.

THE RED-THROATED DIVER.

COLYMBUS SEPTENTRIONALIS, *Linn.*

PLATE CCCCLXXVIII.—MALE IN SUMMER, YOUNG MALE IN WINTER, FEMALE, AND YOUNG UNFLEDGED.

Whilst the icicles are yet hanging from the rocks of our eastern shores, and the snows are gradually giving way under the influence of the April rains, the Blue-bird is heard to sound the first notes of his love-song, and the Red-throated Diver is seen to commence his flight. Already paired, the male and female, side by side, move swiftly through the air, steering their course, at a great height, towards some far distant region of the dreary north. Pair after pair advance at intervals during the whole day, and perhaps continue their journey all night. Their long necks are extended, their feet stretched out rudder-like beyond the short tail, and onwards they speed, beating the air with great regularity. Now they traverse a great arm of the sea, now cross a peninsula; but let what may intervene, their undeviating course holds straight forwards, as the needle points to its pole. High as they are, you can perceive the brilliant white of their lower parts. Onward they speed in silence, and as I stand gazing after them, they have already disappeared from my view.

The middle of May has arrived; our woods are once more filled with the melodies of numberless warblers, and the Divers have ceased to be seen on our eastern coasts. To study their habits at this season, we must follow them to the islands in the mouth of the broad St. Lawrence, or to the granitic rocks of Labrador. The voyage cannot be performed without great expense, and may be attended with danger, but enthusiasm urges me on, and now my bark skims over the blue waters. At length arrived on the rocky shores, I prepare to visit the interior of that rude and moss-clad region. Thousands of little lakes are seen, on which are numberless islets richly clad with grass and sedge, the whole of which seems as if it had grown in a day, so tender are the fresh blades, and so pure their light green tint. High over these waters, the produce of the melted snows, the Red-throated Diver is seen gambolling by the side of his mate. The males emit their love-notes, and, with necks gracefully curved downwards, speed by the females, saluting them with mellow tones as they pass. In broad circles they wheel their



Red-throated Diver.
1. Male Summer Plumage. 2. do Winter. 3. Female. 4. Young.

Drawn from Nature by J. Audubon FRSLS

Printed & Col'd by J. T. Bowen, Philad^a

giddy flight, and now, with fantastic glidings and curves, they dive towards the spot of their choice. Alighted on the water, how gracefully they swim, how sportively they beat it with their strong pinions, how quickly they plunge and rise again, and how joyously do they manifest to each other the depth and intensity of their affection! Now with erected neck and body deeply immersed they swim side by side. Reynard they perceive cunningly advancing at a distance; but they are too vigilant for him, and down like a flash they go, nor rise again until far beyond his reach. Methinks I see them curiously concealed among the rank weeds under the bank of their own islet, their bills alone raised above the water, and there will they remain for an hour, rather than shew themselves to their insidious enemy, who, disappointed, leaves them to pursue their avocations.

The Red-throated Diver is found, in tolerable abundance, on the sea-coast of the United States during autumn, winter, and early spring, from Maryland to the extremities of Maine. The younger the birds, the farther south do they proceed to spend the winter, and it is rare to see an old bird, of either sex, at any season to the south of the Bay of Boston. Farther eastward they become more common, and they may be said to be plentiful towards the entrance of the Bay of Fundy, in the vicinity of which a few remain and breed. I found some in December, January, and February at Boston, where I procured males, females, and young birds. The old had the red patch on the throat rather darker than in the breeding season; the delicate grey and white lines on the neck were as pure as I observed them to be during summer in Labrador; and I have since been convinced that birds of this family undergo very little if any change of colouring after they have once acquired their perfect plumage, the Loon and the Black-throated Diver being included in this remark; while, on the contrary, all the Grebes with which I am acquainted, lose the beauty of their plumage as soon as the breeding season is over. This remarkable difference between the Divers and the Grebes would of itself be sufficient to separate the two genera, were there not also other distinctions. The Divers, moreover, live on the sea during the greater part of the year, and resort to ponds, lakes, or the borders of rivers to breed; whilst the Grebes spend most of their time on inland lakes, marshes, and streams. Immediately after the breeding season, as soon as the young are able to fly, the families of Divers make their way to the arms and inlets of the sea, rarely entering the fresh waters until the following spring.

The Red-throated Diver is at all times an extremely shy and vigilant bird, ever on the alert to elude its numerous enemies. The sight of man seems invariably to alarm it, even in the wildest countries in which it breeds. I have often observed that, while yet several hundred yards from

them, they marked my approach with great watchfulness. First they would dive and make their way to the farther end of the pond, after which, with outstretched necks, they would remain silent and motionless, until I approached within about a hundred yards, when, instead of diving again, as the Loon always does, they at once, with a single spring, rose from the water, and ere I had proceeded a few yards, they were already eight or ten feet above it. If I crept towards them through the tangled mosses or shrubs, they would swim about with their heads elevated, as if determined to make their escape on the appearance of imminent danger. In many instances, my party observed this species in small flocks of five or six in the same lake, when it happened to be of considerable extent; and as this was during the height of the breeding season, we concluded that these associated birds were barren, as I ascertained that males and females, when once paired, remain together until their young are able to fly, when they part company, until the next pairing season, which is about the first of March.

This species begins to breed in Labrador in the beginning of June, and about a fortnight earlier along the Bay of Fundy. The numerous nests which our party found in the former district were all placed on small sequestered islands in the middle of lakes or large ponds of fresh water, rarely more than one mile distant from the sea-shore. These nests consisted merely of a few blades of rank grasses loosely put together, and were quite flat, without any down to warm or conceal the eggs *at any period* of incubation. The nest was placed within a few feet of the water, and well-beaten tracks, such as are made by otters, led to it. Whenever the birds went to this spot they walked nearly erect in an awkward manner, but when they sat in their nest they laid themselves flat on the eggs, in the manner of a Goose or Duck. In no instance did they alight on the islands, but always on the water, at some distance, when, after examining all around them for awhile, they crawled silently out, and moved to the spot which contained their treasure.

Having been told that the Red-throated Diver covers its eggs with down in the manner of many Ducks, I was surprised to find the assertion incorrect, and having killed several individuals during the period of incubation and immediately after it, I carefully examined them, and found all of them fully covered with down, they being, in this respect, quite different from the Eider Duck, the Velvet Duck, the Harlequin Duck, and other species of that family, nay even from the Black Guillemot. Probably it is on account of those birds breeding much farther north, that, according to Dr. RICHARDSON, they there line their nest with down. We also found the *Colymbus glacialis* incubating without any in its nest. The idea generally entertained that the species never lays more than two eggs I found equally incorrect,

for of five nests, two contained two eggs each, two had three each, and the fifth had three young birds. The eggs measure 3 inches in length by $1\frac{1}{2}$ in breadth, and are of an elongated elliptical form, nearly equally rounded at both ends; they are of a deep olive-brown colour, irregularly marked with spots of a darker dull brown. The male incubates as well as the female, and both are extremely solicitous about the safety of their young, which betake themselves to the water on the day succeeding that of their escape from the egg, and are from the first most expert swimmers and divers. Two of the young were shot by Captain EMERY, having been easily approached in the absence of their parents, at which he had shot without success, they not having yet learned from experience the danger of the proximity of man. They dived beautifully, and swam with great buoyancy, inclining their necks forwards, in the manner of the old birds. This was on the 5th of July, 1833. On the 15th of the same month, THOMAS LINCOLN and my son JOHN WOODHOUSE, saw several young ones, which, although quite small, were equally expert at diving. When swimming by the side of their mother they floated high, with the neck quite erect, while the old bird swam deep, with her neck inclined forward. When the little ones dived, they moved under the water like so many turtles, and at last were caught on the bottom of the pond, which was small and shallow, by placing the gun-rods upon them. So averse from moving are the old birds when sitting on their eggs, that they will not bestir themselves until in imminent danger, on which, however, they scramble to the water, dive, and on emerging, immediately rise on wing without uttering any note. The male only is noisy on such occasions, and more especially when it returns from afar to its mate, when it evinces its satisfaction by calling aloud, as it repeatedly passes and repasses over the spot, and then alights in a pompous manner on the water.

The sexes differ materially in size, the male birds being much larger than the females, and weighing at an average fully a pound more. These birds are extremely tenacious of life. One which my son shot on the wing fell, dived instantly, and swam to a considerable distance under water, but returned to the surface, back downwards, and quite dead.

The notes of the Red-throated Diver are harsh and rather loud; they resemble the syllables *cac, cac, cac, carah, carah*, enounced in rapid succession. In some instances the young men of my party found that the most successful method of approaching these birds whilst on the water, was to run as fast as possible towards them and shout loudly, for on such occasions the birds dived instead of flying at once, and on emerging again, afforded them much better chances as they took to wing. At certain times, when approached while they have young, they utter a soft plaintive note, which

evidently conveys to their offspring their wish that they should remain quiet in their hiding places.

The Red-throated Diver does not acquire the full beauty of its plumage until its fourth year. The young are at first covered with thick hairy down, of a blackish colour, inclining to brown. Before they are fully able to fly, this is changed into a dull grey on the upper parts, thickly sprinkled with white dots on the extremity of each feather, the lower parts being of a sullied white. During the second year these tints are firmer, there are fewer spots, and the texture of the lower parts is more silky. In the third, both sexes assume the fine grey of the hind neck, with its longitudinal white stripes, and here and there a few spots of red on the lower part of the throat. The next spring their plumage is perfect.

I have never observed any of these birds on our inland lakes or rivers. In the neighbourhood of Boston, and along the Bay of Fundy, they are best known by the names of "Scape-grace" and "Cape-racer." By the 9th of August the young birds had left the fresh-water lakes and ponds for the bays on the coast, and we were informed by the settlers, both in Newfoundland and Labrador, that, by the last days of September, none were to be found in those countries.

The dislike which this species shews to fresh-water after the breeding season is such, that they are rarely seen in the upper part of large bays, but prefer for their winter residence the shores of sea-islands and barren rocks. Thus, at that season, they are met with about the outer islands of the Bay of Fundy and those along our eastern coast.

While in fresh water, the Red-throated Diver feeds principally on small fish, shrimps, leeches, snails, and aquatic insects. The masses of feather-like substances often found in the stomachs of Grebes, I have never met with in this species. Its flesh is oily, tough, dark-coloured, and disagreeable to the taste, although I saw some mountain Indians feeding upon it at Labrador with apparent pleasure.

COLYMBUS SEPTENTRIONALIS, Bonap. Syn, p. 421.

RED-THROATED DIVER, *Colymbus septentrionalis*, Swains. and Rich. F. Bor. Amer., vol. ii. p. 476.

RED-THROATED DIVER, Nutt. Man., vol. ii. p. 519.

RED-THROATED DIVER, *Colymbus septentrionalis*, Aud. Orn. Biog., vol. iii. p. 20 ; vol. v. p. 625.

Male, 19, 25. Female, 18, 24.

Not uncommon during winter, autumn, and early spring, from Maryland eastward. Breeds in Newfoundland, Labrador, and as far north as the Arctic Seas.

Adult Male in summer.

Bill as long as the head, slender but strong, straight, rather compressed, tapering to a point. Upper mandible with the dorsal line almost straight, the ridge convex, as are the sides, the edges sharp and involute; nasal groove basal, short; nostrils basal, lateral, direct, oblong, pervious. Lower mandible with the angle extremely narrow and extending beyond the middle, the dorsal line straight and sloping upwards to the point, the ridge convex, but narrower than that of the upper mandible, the edges sharp and involute; the point of both mandibles rather sharp.

Head of moderate size, oblong, narrowed before. Neck rather long and slender. Eyes rather small. Body elongated, somewhat depressed. Wings small. Feet short, rather large, placed very far back; tibia almost entirely concealed; tarsus short, exceedingly compressed, sharp-edged before and behind, covered all over with reticulated angular scales; hind toe extremely small, connected with the second by a very small membrane; the anterior toes united by reticulated membranes, the fourth longest, the third a little shorter, the second considerably shorter than the third; all covered anteriorly with very narrow transverse scutella, the second toe with a free two-lobed membrane; claws very small, depressed, rounded.

Plumage short and dense; of the head and neck very short, blended; of the lower parts blended, short, and with a silky gloss; of the upper slightly glossed and somewhat compact; the feathers in general oblong and rounded. Wings proportionally very small and narrow, curved; primaries strong, tapering, first longest, second almost as long, the rest rapidly graduated; secondaries broad, rounded. Tail extremely short, rounded, of twenty rounded feathers.

Bill bluish-black. Iris deep bright red. Feet brownish-black, the anterior edge of the tarsus, the upper surface of the toes, the claws, and part of the webs, pale livid flesh-colour. Fore part and sides of the head, throat and sides of the neck, of a fine bluish-grey; fore part of the neck rich brownish-red; hind part of the head and hind neck longitudinally streaked with greenish-black and pure white, each feather black in the middle, with the sides white, the colours disposed in lines. The upper surface brownish-black, tinged with green, more or less mottled with white according to age, excepting the primary quills and the tail-feathers, the latter of which are merely paler at the end. The whole under surface pure white, excepting the feathers on the sides under the wings, some of those about the vent, and the lower tail-coverts, which are greyish-brown, with white margins and tips.

Length to end of tail $25\frac{1}{2}$ inches, to end of claws 27; extent of wings $43\frac{1}{2}$; bill $2\frac{1}{2}$; gap $3\frac{3}{8}$; tarsus 3; fourth toe and claw $3\frac{3}{4}$; wing from flexure $11\frac{3}{4}$; tail 3. Weight 4 lbs.

Adult Female in summer.

The female is precisely similar to the male in form and colouring, but is considerably smaller.

Length to end of tail 25 inches, to end of claws $28\frac{1}{2}$; extent of wings 43. Weight 3 lbs.

Male in winter immature.

In this state the principal differences are the following:—The fore part of the neck, instead of being of a uniform rich brownish-red, is merely mottled with that colour; all the feathers of the upper surface have each two white spots towards the end; the tail-feathers are edged and terminated with white; the colouring in general is somewhat less pure and deep, and the bill is of a much paler tint.

Young bird unfledged.

The young are at first covered with a dense elastic down of a greyish-black colour, tinged with brown. The bill is bluish-black, its basal edges yellow; the iris reddish-brown.

The width of the mouth is 10 twelfths; but the lower jaw is dilatable to $1\frac{1}{2}$ inches. On the palate are two papillate ridges, with two series of papillæ on each side of the posterior aperture of the nares, which is oblongo-linear, $1\frac{1}{4}$ inches long, and margined with papillæ. On the anterior part of the upper mandible are three ridges. The tongue is 1 inch 8 twelfths long, very slender, trigonal, flat above, tapering to a horny point. Œsophagus, *a b c*, 14 inches in length, at its commencement $1\frac{1}{2}$ inches in width, but at the lower part of the neck enlarging to 2 inches; on entering the thorax it contracts to $1\frac{1}{2}$ inches; the proventriculus, *b c*, again enlarges to 2 inches, forming a very large ovate sac. The lobes of the liver are very large and nearly equal, the length of the one being 3 inches 10 twelfths, that of the other 3 inches 8 twelfths. The stomach, *c d e f*, is rather large, roundish, 1 inch 9 twelfths in diameter, a little compressed, its lateral muscles rather thin, the lower somewhat prominent. Its contents are remains of fishes, and a great quantity of small stones and pebbles. The epithelium is pretty thick, dense, with numerous longitudinal rugæ. The proventricular glands form a belt 1 inch 10 twelfths in breadth. The intestine is 4 feet 11 inches long; its average width 8 twelfths. The cæca, Fig. 2, *c c*, $2\frac{1}{2}$ inches long, $4\frac{1}{2}$ twelfths broad, towards the end 6 twelfths, with the extremity rounded. The rectum is 2 inches long, with a globular cloaca, *b*, $1\frac{1}{2}$ inches in diameter.

Trachea $11\frac{1}{2}$ inches long, much flattened, from 6 twelfths to 4 twelfths in breadth; the rings 145, with 2 dimidiate. Bronchi moderate, of 20 half rings. Lateral muscles strong; a single series of inferior laryngeal muscles going to the last half ring of the trachea.

FIG. 1

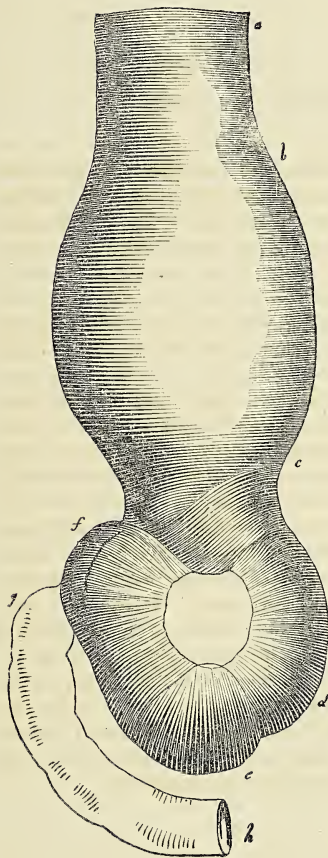
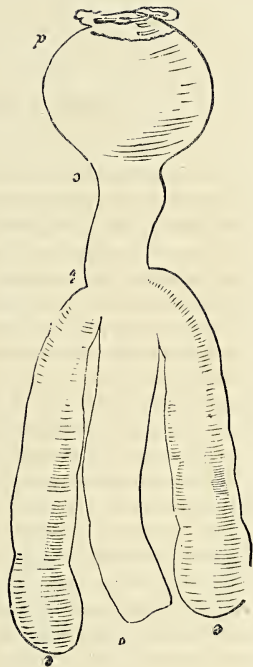


FIG. 2



GENUS II.—*PODICEPS*, *Lath.* GREBE.

Bill about the length of the head, or shorter, straight, rather stout, much compressed, tapering, pointed ; upper mandible with the dorsal line declinate and more or less convex toward the end, the ridge convex, the sides erect and somewhat convex, the edges sharp and inflected, the tip narrow ; nasal groove rather long, extending to nearly half the length of the mandible, feathered at the base ; nostrils linear-elliptical, basal, rather small, pervious ; lower mandible with the angle long and extremely narrow, the dorsal line ascending and straight, the sides erect and slightly convex, the edges sharp and involute, the tip acute. Head of moderate size, oblong, narrowed before ; neck rather long and slender ; body long, depressed. Feet short, large, placed close to the extremity of the body ; tibia feathered to the joint ; tarsus extremely compressed, its anterior edge with a row of small scutella, the sides broadly scutellate, the posterior ridge with a double row of small prominent scales ; toes four, first very small, with a posterior membrane, fourth longest, all scutellate, the anterior connected at the base by membranes, and having on both sides an expanded web-like margin, marked with oblique lines. Claws flat, that of the third toe broadest. Plumage very soft and blended, on the lower parts dusky. Wings small, acute, curved, the second primary longest, the first little shorter ; secondaries short and rounded. Tail a slight tuft of loose feathers, fourteen in number. Tongue slender, trigonal, pointed ; œsophagus of moderate width ; proventriculus very large, ovate ; stomach extremely large, roundish, its muscular coat thin ; the epithelium thick, soft, rugous ; a small pyloric sac ; intestine of moderate length and width ; cœca rather long, slender ; cloaca very large, globular. Bronchi with the rings entire and ossified.



Crested Grebe.

1 Adult. Male in Spring 2 Young (first Winter.)

Drawn from Nature by J. J. Audubon F.R.S.E.L.S.

Lith. Printed & Col. by J. T. Bowen, Philad.

THE CRESTED GREBE.

PODICEPS CRISTATUS, *Lath.*

PLATE CCCCLXXIX.—MALE AND FEMALE.

This beautiful species returns from its northern places of residence, and passes over the Western Country, about the beginning of September. A few remain on the lower parts of the Ohio, on the Mississippi, and the lakes in their neighbourhood, but the greater number proceed towards the Mexican territories. They pass swiftly through the air, at a height of about a hundred yards, in flocks of from seven or eight to fifty or more, proceeding in a loose body, and propelling themselves by continued flappings, their necks and feet stretched out to their full length. I have observed them thus passing in autumn, for several years in succession, over different parts of the Ohio, at all hours of the day. On such occasions I could readily distinguish the old from the young, the former being in many instances still adorned with their summer head-dress. I never saw this species near the sea-coast, where, on the contrary, I have met with the Red-necked Grebe.

When about to alight on the water, these birds glide swiftly downward, with their wings half-closed, and produce a sound not unlike that of a Hawk stooping towards its prey. Their velocity is so great at this moment, that on alighting, they glide on the surface of the water for twenty or thirty yards, leaving a furrow in their wake. In a few moments they are all engaged in washing and cleaning themselves, after which they dive in pursuit of the fishes on which they feed, and which they secure by following them in the manner of Divers and Cormorants. They are exceedingly quick-sighted, and frequently elude by diving the shot intended for their destruction, seldom after being chased raising more than their bill above the water, but rarely making for the shore unless when nearly exhausted.

When in ponds, they may easily be caught with fishing hooks placed on lines near the bottom; but if the lines are not closely attended to, or held from a place of concealment, where you may feel that they are hooked, and at once haul them out, the birds drown in a very short time. On catching two or three in this manner, I found the pond deserted the following morning and for several days after. They very rarely fly in your presence, and they leave the ponds at night. If forced to rise on wing, they run

paddling on the water for several yards before they rise, and fly several times round a pond of thirty or forty yards before they attain the level of the tree-tops, for they never fly through the woods. When once high in the air, they move in a direct course and with speed towards some other pond or the nearest river. I do not remember to have ever met with a bird of this species on a narrow creek or bayou, or on muddy waters; and on the Ohio's rising I have observed that they abandon the river and betake themselves to the clear ponds of the interior.

By the 1st of October, scarcely any difference can be perceived between the young and the old birds with respect to plumage, only the latter have the under surface of the wings still dashed with the reddish colour of the summer dress. I am not able to say from observation how long the young are in attaining maturity; but European writers assert that they take three or four years. When these birds leave the southern waters about the beginning of April, the old already shew their summer head-dress, but seldom have it so perfect as is represented in the plate.

The food of this species consists of fishes, aquatic insects, and small reptiles, together with the seeds of water plants. Dr. RICHARDSON states that these birds are abundant in all the secluded lakes of the mountainous districts of the Fur Countries, and adds that their nests are formed of a large quantity of grass, placed among reeds and earices, and rise and fall with the water. Mr. YARRELL has kindly furnished me with specimens of the eggs, which are generally four, measure two inches and a quarter in length by one inch and a half, and have an oval form, and a smooth surface, of a uniform yellowish-white colour.

PODICEPS CRISTATUS, Bonap. Syn., p. 417.

PODICEPS CRISTATUS, *Crested Grebe*, Swains. and Rich. F. Bor. Amer., vol. ii. p. 410.

CRESTED GREBE, or GANNET, Nutt. Man., vol. ii. p. 250.

CRESTED GREBE, *Podiceps cristatus*, Aud. Orn. Biog., vol. iii. p. 595.

Male, 24, 33.

Not uncommon during autumn and early spring on all the larger streams of the Western Country, as well as on the coast of the Atlantic, from Nova Scotia to Texas. Breeds in the mountainous parts of the Fur Countries, Rocky Mountains, and high latitudes. Migratory.

Adult Male in spring.

Bill about the length of the head, straight, compressed, tapering. Upper mandible with the dorsal line straight, slightly declinate toward the tip, the ridge convex, the sides convex, the edges sharp and inflected, the tip rather sharp. Nasal groove rather wide, extending to nearly half the length of

the mandible; nostrils linear-elliptical, basal, rather small, pervious. Lower mandible with the angle long and extremely narrow; dorsal line beyond it ascending and straight, sides erect, slightly convex, tip acuminate, edges sharp.

Head of moderate size, oblong, compressed. Neck long, slender. Body long and depressed. Feet short, large, placed close to the extremity of the body; tibia feathered to the joint; tarsus extremely compressed; its anterior edge with a row of small scutella, the sides with broad scutella, behind which are some irregular scales, the posterior ridge with a double line of small prominent scales; first toe very small, with a posterior membrane, fourth longest; the toes scutellate above, connected at the base by a membrane, and having on both sides an expanded web-like margin marked with oblique lines, and having a crenated edge. Claws flat, that of third toe broadest.

Plumage very soft, blended, on the lower parts silky, on the back glossy and rather compact. Two tufts of elongated feathers on the occiput, and a large frill on the sides and anterior portion of the neck at its upper part. Wings small, acute; primaries much curved, second longest, first almost equal, the rest rapidly graduated; secondaries short, rounded. Tail a slight tuft of loose feathers.

Bill blackish-brown tinged with carmine; bare loreal space dusky-green, as is the edge of the eyelids. Iris bright carmine. Feet greyish-black, the webs greyish-blue. Upper part of the head and tufts greyish-black tinged with green, as is the hind part of the ruff, its anterior part being brownish-red; side of the head and the throat white; fore neck white tinged with brown; breast silvery white, sides reddish-brown with dusky streaks; the upper parts are brownish-black, the feathers edged with lighter, the sides of the neck tinged with reddish, as is the rump. Wing-coverts greyish-brown, primary quills brownish-black, tips of the inner white, the middle secondaries white.

Length to end of tail 24 inches, to end of wings 21, to end of claws 29; extent of wings 33; wing from flexure $7\frac{1}{2}$; bill along the ridge 2, along the edge of lower mandible $2\frac{7}{8}$; tarsus $2\frac{1}{2}$; third toe $\frac{3}{4}$, its claw $\frac{1}{4}$. Weight 2 lbs. 9 oz.

Adult Female in spring.

The female has the occipital feathers a little elongated, but wants the ruff on the neck. Bill dusky-green; bare loreal space, edges of eyelids, and iris, as in the male. Upper part of head and hind neck blackish-grey; back and wings as in the male, but more tinged with grey; lower parts silvery white, the sides under the wings dusky.

Length to end of tail $19\frac{1}{2}$, to end of claws $24\frac{1}{4}$; extent of wings 30; bill

along the back $2\frac{1}{4}$; along the edge of lower mandible $2\frac{3}{4}$; tarsus $2\frac{1}{4}$; third toe $2\frac{1}{4}$, its claw $\frac{1}{4}$. Weight 1 lb. $6\frac{1}{2}$ oz.

The following account of the digestive organs of this species was taken from an adult male.

The œsophagus is nine and a half inches long; at its commencement, and for an inch and a half, it has a diameter of half an inch, for the next two inches only two twelfths, towards the lower extremity four twelfths; this, however, in the contracted state, the specimen having been kept in spirits. The mucous coat is raised into numerous longitudinal folds.

The walls of the proventriculus are extremely thick, the glands cylindrical, generally about a quarter of an inch long, and one-twelfth in diameter. The stomach is roundish, compressed, the muscular coat very thick, being that of a true gizzard, the tendons nearly half an inch in diameter; the inner coat thick, the cuticular lining very thick and rugous.

Between the orifice of the œsophagus and the pylorus is a rounded lobe, from the lower part of which the intestine comes off. The pylorus has no valve, but a thick marginal rim. The intestine, immediately after its commencement, dilates to the diameter of half an inch, and continues of that size for twelve inches, then gradually contracts for about six inches, when its diameter is four-twelfths, and again within six inches of the cœca becomes enlarged. The cœca come off at the distance of two inches from the anus, and are an inch and a half in length, a little enlarged towards their extremity, and rounded. The rectum is half an inch in diameter, the cloaca one inch. The entire length of the intestine is forty-two inches.

The heart is conical, rather pointed, and slightly curved. The trachea is flattened, of uniform diameter, the rings complete, 167 in number, its transverse diameter two inches and half a twelfth, contracted at the bifurcation to two-twelfths.

The tail of the Grebes is usually described as a small tuft of feathers; but on carefully removing the coverts and downy parts, the tail may be satisfactorily traced. In this species there are 14 feathers, on each side 7 arranged in a semicircular manner. The two middle feathers are separated to the distance of about $\frac{2}{3}$, and the two outer or lateral approach each other below, leaving an interval of about the same space. When the feathers are broken across near their bases, which they frequently are, there is thus produced the appearance of a small circular tuft. When perfect, they are about $1\frac{1}{2}$ inches long, arched, with loose barbs, downy at their extremities.



Red-necked Grebe.
1 Adult. Male Spring Plumage 2 Young Winter Plumage

Drawn from Nature by J. J. Audubon, F.R.S.L.S.

Lith. Printed & Col^d by J. T. Bowen Philad^a

THE RED-NECKED GREBE.

PODICEPS RUBRICOLLIS, *Lath.*

PLATE CCCCLXXX.—MALE AND YOUNG.

I have found this species along the coast of New York to Maine, in the winter season, when old and young were generally in about equal number. At Boston I procured several specimens. On the Bay of Fundy and among the islands at its entrance, I saw these Grebes already in their spring plumage, it being then the beginning of May. On one occasion our boat was rowed over an eddy in which a pair had dived in search of food. On emerging they were only a few yards distant; but, although several guns were fired at them, they escaped unhurt, for they instantly dived again, passed under the boat at the depth of about a yard, and did not rise until at a safe distance. None of us could conceive how they had managed to elude us, for as they were so near, the shot threw up the water in its course, and I had expected to find them completely mangled.

Although I have seen this species far up our salt-water bays, I never observed it on any of the southern fresh-water ponds or rivers. Dr. RICHARDSON states, in the *Fauna Boreali-Americana*, that it "is very common in the Fur Countries, frequenting every lake with grassy borders." M. TEMMINCK says "that they inhabit rivers, lakes, and the borders of the sea, but in greater number on fresh-waters; are tolerably common in different parts of Europe; feed on small fish, fry, amphibious reptiles, insects, and vegetables; form their nests of the same materials, and place it in the same situations as the Crested Grebe, and lay three or four eggs." An egg lent me by my esteemed friend Mr. YARRELL, measured two inches in length by one inch and a quarter in breadth, and was of a uniform pale greenish-white.

PODICEPS RUBRICOLLIS, Bonap. Syn., p. 417.

PODICEPS RUBRICOLLIS, *Red-necked Grebe*, Swains. and Rich. F. Bor. Amer., vol. ii. p. 411.

RED-NECKED GREBE, Nutt. Man., vol. ii. p. 253.

RED-NECKED GREBE, *Podiceps rubricollis*, Aud. Orn. Biog., vol. iii. p. 617; vol. v. p. 620.

Male, 18 $\frac{1}{2}$, 32.

During winter, not uncommon from New York to Maine. Breeds in the Fur Countries. Accidental in the interior.

Adult Male.

Bill about the length of the head, straight, rather slender, compressed, acute. Upper mandible with the dorsal line straight and slightly sloping to the middle, then slightly convex, the ridge convex, the sides sloping, towards the end erect and convex, the edges acute and inflected. Nasal groove extending to the middle of the mandible; nostrils sub-basal, linear-elliptical, pervious. Lower mandible with the angle long and extremely narrow, the dorsal line ascending and straight, the sides erect, slightly convex, the edges sharp, inflected, the tip narrow, very acute.

Head of moderate size, oblong, compressed. Neck long and slender. Body depressed. Feet large, placed very far behind; tibia feathered almost to the joint; tarsus short, extremely compressed, anteriorly with a narrow scutellate ridge, laterally with very broad scutella, posteriorly with a narrow ridge having a double row of small prominent scales. Hind toe very small, with an inferior small membrane; fore toes long, the outer longest, scutellate above, united at the base by short webs, externally margined with narrowish, internally with broad, lobe-shaped expansions, which are marked with parallel oblique lines, and crenate on the edges. Claws flattened, that of the middle toe broadest, with an extremely thin, broad terminal edge.

Plumage of the head and neck very soft and downy, of the breast and sides silky and highly glossed, of the abdomen and rump downy, of the upper parts imbricated, but with loose edges. Wings small; primaries much curved, the first longest, the second almost equal, the inner secondaries extending beyond the first primary when the wing is closed. Tail a small tuft of loose feathers. On the head is a tuft of elongated feathers on each side behind the eye, and those of the posterior part of the cheek are also elongated.

Bill brownish-black, bright yellow at the base. Iris carmine. Tarsi and toes greenish-black externally, yellow on the inner side, the edges of the lobes dusky. Upper part of the head greyish-black, lower part ash-grey, with a white line from the base of the lower mandible to beyond the eye. Hind part of the neck, and upper parts generally, greyish-black; the feathers edged with pale brown; the edge of the wing and the outer secondaries white. The fore part and sides of the neck rich brownish-red; the breast and sides are of a silvery white faintly marked with grey.

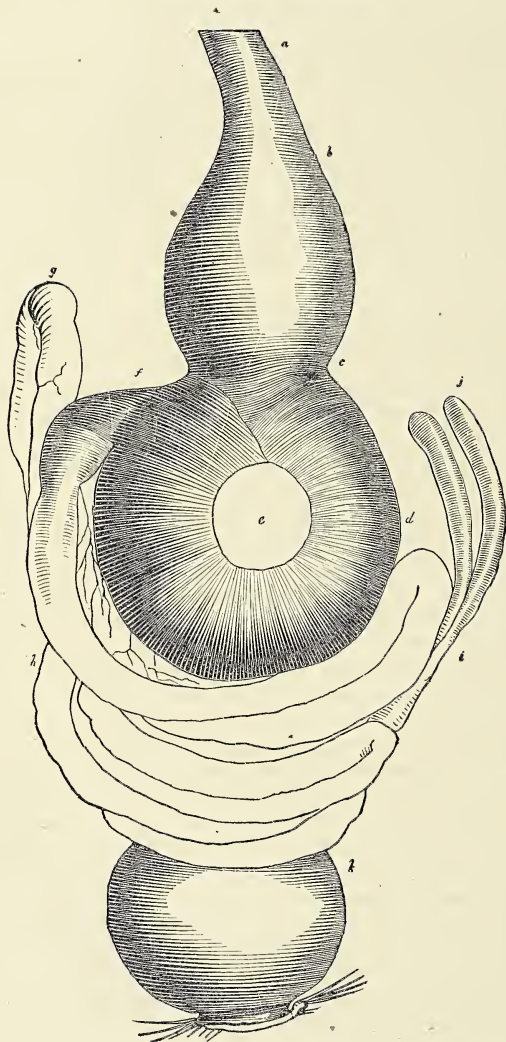
Length to end of rump-feathers $18\frac{3}{4}$ inches, to end of wings $16\frac{1}{2}$, to end of claws $2\frac{1}{4}$; extent of wings 32; wing from flexure $7\frac{1}{4}$; bill along the back $1\frac{1}{2}$, along the edge of lower mandible $2\frac{3}{4}$; tarsus 2; outer toe $2\frac{1}{2}$, its claw $\frac{1}{4}$. Weight 23 oz.

Young after first moult.

Bill bright yellow, the ridge of the upper mandible dusky. Iris pale yellow. Feet as in the adult. The upper part of the head blackish-grey, the hind neck, and the upper parts generally, of the same colour, but darker towards the rump; the edge of the wing and the outer secondaries greyish-white, the latter grey towards the end. The lower parts greyish-white.

Female from Dr. T. M. BREWER. Length to end of tail $19\frac{1}{2}$ inches, to end of wings $17\frac{1}{2}$, to end of claws $24\frac{1}{4}$; wing from flexure $7\frac{3}{4}$; tail $1\frac{3}{4}$; extent of wings $32\frac{1}{4}$; bill along the ridge $1\frac{1}{2}$; tarsus $2\frac{3}{2}$; hind toe $\frac{7}{2}$, its claw $\frac{1}{2}$; second toe $1\frac{1}{2}$, its claw $\frac{1}{2}$; third toe $2\frac{1}{2}$, its claw $\frac{5}{2}$; fourth toe $2\frac{1}{2}$, its claw $\frac{3}{2}$.

The mouth is narrow, $9\frac{1}{2}$ twelfths in width; the palate slightly convex, with two faint lateral ridges on each side; its anterior part extremely narrow, with three longitudinal ridges, the lower mandible still narrower, and deeply channelled. Tongue 1 inch 7 twelfths long, slender, tapering to a thin horny point, trigonal, as deep as broad, fleshy and concave above, horny beneath. Œsophagus, *a b c*, $10\frac{1}{4}$ inches long; its width uniformly $\frac{1}{2}$ inch along the neck; the proventriculus, *b c*, however, is dilated to a very large ovate sac nearly $1\frac{1}{2}$ inches broad, 1 inch 9 twelfths in breadth. The stomach, *c d e f*, is of enormous size, roundish, slightly compressed, $2\frac{1}{4}$ inches in diameter; its muscular coat reduced to a single series of large fasciuli; its tendons, *e*, circular, 9 twelfths in breadth; the epithelium thick, soft, longitudinally rugous. The proventricular glands are of a cylindrical form, the largest being $\frac{1}{2}$ inch long, and 1 twelfth in breadth; they form a complete belt $1\frac{1}{8}$ inches in breadth. The inner coat of the stomach is destitute of epithelium, being quite soft and smooth. The stomach, therefore, is in all respects similar to that of the truly piscivorous birds, such as Divers and Herons, and totally different in structure from that of the Coots, to which the Grebes might be supposed to be allied, on account of the structure of their feet. On the other hand, they differ from the Divers and Cormorants in the form of the œsophagus, which in these birds is extremely wide, whereas in the Grebes it is exceedingly contracted, and more resembles that of the Coots, Gallinules, and Rails. The proventriculus is intermediate between that of the birds just mentioned and the Cormorants. There is a pyloric sac of small size, approximating to that of the Pelican family. The stomach is moderately distended with a great quantity of feathers, apparently those of the bird itself or of some species of the same genus. These feathers are intermixed with vertebræ of small fishes, easily distinguishable by their concave surfaces and three prominent spines. The duodenum curves round the stomach, returning at the distance of $5\frac{1}{2}$ inches, ascending to the liver as usual, passing down the right side, and forming several convolutions, the





Horned Grebe

1 Adult, Male. 2 Female in Winter

Drawn from Nature by J.J. Audubon, F.R.S.E.L.S.

Large Printed & Col'd by J. T. Bowen Philad.

number of turns being twelve. Its length is 33 inches; its width $\frac{1}{2}$ inch at the upper part, towards the rectum only 3 twelfths. The cœca are 2 inches long, 2 twelfths in breadth, uniform, unless at the base, where they are narrower; their distance from the extremity 3 inches. The cloaca is globular, $1\frac{1}{2}$ inches in diameter.

The trachea is $9\frac{1}{4}$ inches long, of the nearly uniform width of $3\frac{1}{4}$ twelfths, unless at the lower part, when it is narrowed to 2 twelfths; flattened in its upper half, and compressed in the lower; the rings moderately firm, 180 in number. The Grebes differ from almost all other birds in having the bronchial rings complete and firmly ossified. In the present species, they are only 8 in number, the remaining part of the bronchi being membranous. There are the usual cleido-tracheal museles; the sterno-tracheal, part of which is continuous with the lateral museles, but the inferior portion distinct, and attached to several of the rings; there is also a single pair of inferior laryngeal museles.

The jugular veins are of vast size, and toward the lower part of the neck form an immense dilatation; that of the left side being distended with coagulated blood to 9 twelfths of an inch, and so continuing until it enters the heart. The other is $\frac{1}{2}$ inch in breadth. In this respect there seems to be an analogy to the diving mammifera, such as the seals and dolphins.

THE HORNED GREBE.

PODICEPS CORNUTUS, *Linn.*

PLATE CCCCLXXXI.—MALE AND YOUNG.

The period at which this little Grebe makes its first appearance, after the breeding season, on the waters of the Western States, such as the Ohio, the Mississippi, and their numerous tributaries, is the beginning of October, when I have seen them arriving and passing onward on wing at a considerable height in the air, following the course of the streams. The generally received idea that birds of this genus perform their migrations on the water, is extremely absurd. I have already offered some remarks on this subject, but as too much cannot be said, when an erroneous notion extensively

adopted has to be disproved, I here repeat that I have seen flocks of Grebes on wing and migrating high in the air, apparently with as much ease as many longer-winged birds, and with considerable velocity.

Towards evening, on the 14th of October, 1820, I was floating in a small boat on the Ohio. The weather was perfectly calm, and I was startled by a whistling sound over head, resembling that of a Hawk stooping on its prey, when, on looking up, I saw a flock of Grebes, about thirty in number, gliding towards the water as if about to alight within a quarter of a mile from me. In a few minutes they had come within a few yards of the surface of the water, when suddenly checking their speed, they pursued their course until out of sight; but in a short time I saw them returning towards me, and in less than a minute they all passed at a distance of forty or fifty yards, took a round and alighted pell-mell. The next moment, they were all engaged in washing and trimming themselves, in the manner of Ducks, Cormorants, and other aquatic birds. As I rowed towards them, they scarcely took notice of me, so that they were easily approached; and finding a number of them close together, I fired and killed four. The rest paddled off for some yards, rose on wing, and flew down the stream in a pretty close body, looking as if not disposed to settle again for some time. On picking up the dead birds, I found them to be of the present species, three being young, the other an adult with the winter plumage beginning to appear. Here I may remark, that Grebes in general do not moult so early as most other birds after they have young; thus the Crested Grebe often passes to the south in September, with its head still adorned with a large portion of the feathers of its spring and summer tippet. While residing at different places on the Ohio, I have many times witnessed the passage of the Horned and the Crested.

The Horned Grebe is abundant during autumn and winter on the large rivers or inlets of the Southern States, but rare along the coasts of the Middle and Eastern Districts. On the rivers about Charleston in South Carolina it is seen at those seasons in considerable numbers, although not in larger flocks than from four to seven individuals. The same is observable from that place to the mouths of the Mississippi. It is particularly fond of those streams of which the borders are overgrown by rank sedges and other plants, and are subject to the influx of the tide. In such places they enjoy greater security while searching for their food than in ponds, to which, however, they for the most part retire at the approach of the pairing season, which commences early in February. At that time one might be apt to think that these birds could scarcely fly, as they are then rarely seen on wing; but when they are pursued, and there happens to be a breeze, they rise from the water with considerable ease, and fly to a distance of several

hundred yards. In December and January I have never procured any having the least remains of their summer head-dress ; but by the 10th of March, when they were on their journey towards the north, the long feathers of the head were apparent. These tufts seem to attain their full development in the course of a fortnight or three weeks, the old birds becoming plumed sooner than the young, some of which leave the country in their winter dress.

On the ground, this species is not better off than the Dobeck, it being obliged to stand nearly erect, the hind part of the body resting, and the tarsi and toes extended laterally. They dive with great celerity, and when once acquainted with the effects of the gun are not easily shot. A report is at times sufficient to make the old birds dive at once, although they may be quite beyond the reach of a shot. The young birds are more easily procured at their first appearance ; but the most efficient method of obtaining them is to employ fishing nets, in the meshes of which they become entangled.

Excepting a species of Hawk nearly allied to *Circus cyaneus*, I know of no other bird that has the eye of such colour, the iris being externally of a vivid red, with an inner circle of white, which gives it a very singular appearance. On attentively examining the eyes of our Divers and Grebes, I have not found any with similar eyes. The Horned Grebe does not seem to see better than any other species, nor does it appear to be more diurnal than the rest, nor are the objects on which it feeds more minute, for I have found as small seeds in the stomach of the large Grebe as in that of the present species. The reason of this strange colouring of the iris, therefore, I am unable to conjecture.

Although the greater number of these birds go far northward to breed, some remain within the limits of the United States during the whole year, rearing their young on the borders of ponds, particularly in the northern parts of the State of Ohio, in the vicinity of Lake Erie. Two nests which I found were placed at a distance of about four yards from the water's edge, on the top of broken down tussocks of rank weeds. The materials of which they were composed were of the same nature, and rudely interwoven to a height of upwards of seven inches. They were rather more than a foot in diameter at the base, the cavity only four inches across, shallow, but more neatly finished with finer plants, of which a quantity lay on the borders, and was probably used by the bird to cover the eggs when about to leave them. There were five eggs in one nest, seven in the other ; all contained chicks (on the 29th of July) ; they measured one inch and three quarters in length, by one inch and two and a half eighths ; their shell was smooth, and of a uniform yellowish cream colour, without spots or marks of any kind. The nests were not more than fifty yards apart, on the south-western side of the

pond. I am thus particular because of the near relation of this bird to the *Podiceps auritus* of LATHAM, with which it may be confounded by a not over-careful observer, as may the eggs too, those of the latter species being precisely of the same length, but fully an eighth of an inch narrower, which of course gives them a more elongated appearance. I have observed the same differences in the eggs of these two species in Europe. I could not ascertain if both the parent birds incubate; but as I saw two pairs on the pond, I am inclined to think that they do. The nets were not fastened to the weeds around them, nor do I conceive it probable that they could be floated, as various writers assert they are at times.

I have not seen the young of this species when small; but from the knowledge I have of those of other Grebes, I feel pretty certain that the notions entertained of their being carried either on the back or under the wings of their parents in cases of danger must be erroneous, as Grebes in all such cases dive or fly at once, when it would be impossible for the old and young to keep thus attached to each other.

I have observed in the stomachs of almost all that I have examined, a quantity of hair-like substances rolled together like the pellets of Owls, but have not ascertained whether or not these masses are disgorged. They certainly cannot pass through the intestines. But unless birds of this kind are kept in an aviary and watched, this matter must remain unknown. The food of this species, while on salt-water, is composed of shrimps, small fishes, and minute crustacea. While on fresh-water, they procure insects, leeches, small frogs, tadpoles, and aquatic lizards; they also pick up the seeds of grasses, and I have found as many in the stomach of an individual as would fill the shell of one of its eggs. Their flight is performed by regular short flappings, executed with great quickness.

I have represented an adult male in full spring plumage, and a young bird shot in December. The males are rather larger than the females, which are similar in colour, but rarely have the head so well feathered during the breeding season.

PODICEPS CORNUTUS, Bonap. Syn. p., 417.

PODICEPS CORNUTUS, *Horned Grebe*, Swains. and Rich. F. Bor. Amer., vol. ii. p. 411.

HORNED GREBE, or DOBCHICK, Nutt. Man., vol. ii. p. 254.

HORNED GREBE, *Podiceps cornutus*, Aud. Orn. Biog., vol. iii. p. 429; vol. v. p. 623.

Male, 14 $\frac{3}{4}$, 25 $\frac{1}{2}$.

Very common during autumn on the Ohio, Missouri, Mississippi, and all their tributaries, as well as in all the Atlantic Districts, to Texas. Breeds from the Great Lakes to the Fur Countries. Migratory.

Adult Male in spring.

Bill shorter than the head, straight, acute, rather slender. Upper mandible with the dorsal line straight for one-half of its length, towards the end declinate and slightly convex, the ridge convex, the sides sloping, the edges sharp and inflected, the tip acute. Nasal groove broad, extending to beyond the middle of the mandible; nostrils sub-basal, linear-elliptical, pervious. Lower mandible with the angle long and very narrow, the dorsal line short, ascending, straight, the sides erect, slightly convex, the edges sharp, inflected, the tip narrow, acute.

Head of moderate size, oblong, compressed. Neck rather long and slender. Body depressed. Feet large, short, placed far behind; tibia feathered to the joint; tarsus short, extremely compressed, anteriorly with a narrow scutellate ridge, laterally with numerous broad scutella, posteriorly with a narrow ridge having a double row of small prominent scales. Hind toe very small, with an inferior small membrane; fore toes long, the outer longest, scutellate above, united at the base by short webs, externally margined, internally with broad rounded expansions, which are marked with parallel oblique lines, and crenate on the edges. Claws flattened, that of the middle toe broadest, with an extremely thin, broad terminal edge.

Plumage of the head and neck very soft and downy, of the breast and sides silky and highly glossed, of the abdomen downy, of the upper parts imbricated, but with loose edges. Wings small; primaries much curved, the first longest, the second almost equal. Tail, a small tuft of loose feathers. On the head, at this season, is a tuft of soft feathers on each side behind the eye, and a larger on each side of the upper part of the neck.

Bill bluish-black, its tip yellow. Short loreal space bright carmine, as is the iris, its inner margin white; edges of eyelids greyish-blue. Feet dusky externally, internally and on the anterior and posterior ridges of the tarsus dull yellow; claws dusky. Forehead greyish-brown; upper parts of the head bluish-black, as are the sides, fore neck anteriorly, and the elongated ruff feathers; a broad band over the eyes, and the elongated tufts behind them yellowish-brown. Fore neck brownish-red; lower parts white, the sides reddish-brown: abdomen dull grey. The upper parts are brownish-black, the feathers edged with greyish, the middle secondary quills white.

Length to end of tail $14\frac{3}{4}$, to end of claws 19; extent of wings $25\frac{1}{2}$; wing from flexure $5\frac{3}{4}$; bill along the back $1\frac{1}{2}$, along the edge of lower mandible $1\frac{1}{4}$; tarsus $1\frac{1}{2}$; outer toe $1\frac{1}{2}$, its claw $\frac{3}{4}$. Weight 14 oz.

Young Female in winter.

The feathers of the hind head are a little elongated, but at this age there are no tufts on the head. In other respects the plumage is as in the adult male. The bill is bluish-grey, as is the bare loreal space; the eye bright

carmine, the iris with an inner white edge ; the feet bluish-grey. The upper part of the head, and the hind neck, are greyish-black, as are the upper parts in general. The feathers of the back edged with light grey. The throat, the sides of the head, a broad patch on each side of the neck nearly meeting behind, and the breast white ; the sides and downy feathers of the abdomen brownish-grey. Some of the secondaries are white, as in the adult male.

Male. The mouth as in the last species, $4\frac{1}{2}$ twelfths wide ; the tongue 11 twelfths long, and similar to that of the Red-necked Grebe. Œsophagus 7 inches in length, along the neck only 4 twelfths broad ; the proventriculus excessively large, ovate, 10 twelfths in breadth. The stomach is an enormous sac, 2 inches long, $1\frac{1}{2}$ broad ; a little compressed, of the same structure as in the last species ; its tendons 4 twelfths in breadth. There is a small flattened pyloric lobe. The contents of the stomach are feathers, and bones of fishes. There is in this species a very distinct, thick, soft, bright red, longitudinally rugous epithelium. The proventricular glands are of great size, the largest 3 twelfths long, 1 twelfth in breadth ; they form a belt $1\frac{1}{4}$ inches in breadth. The lobes of the liver are very large, the left 2 inches 4 twelfths long, the right 2 inches ; the gall-bladder oblong. The intestine forming 12 curves ; its length is 49 inches, its breadth at the upper part 5 twelfths, diminishing to 3 twelfths ; the cæca 2 inches long ; their greatest width 2 twelfths, their distance from the extremity 1 inch 9 twelfths. Cloaca globular, about 7 twelfths in width.

The trachea is $6\frac{1}{4}$ inches long, much flattened in its whole length, excepting half an inch at the lower part ; for half its length it is 2 twelfths in breadth, then enlarges to 3 twelfths, and finally diminishes to $1\frac{1}{2}$ twelfths. The rings are 184, firm. The bronchi are slender, with the rings complete, ossified, 12 in number : the remaining part being membranous. The muscles as in the last.

The jugular veins are not enlarged in this species.



W. H. H.

Red Grebe

1. Male, 2. Young, first year

Drawn from Nature by J. J. Audubon, F.R.S.L.S.

Lith. Printed & Col. by J. T. Bowen Philad.

EARED GREBE.

PODICEPS AURITUS, *Lath.*

PLATE CCCCLXXXII.—ADULT AND YOUNG.

The specimens from which my figures of this species of Grebe have been taken, were lent me by my noble and kind friend the Right Honourable the Earl of DERBY, who received them from North America, where, as I am assured, it is not uncommon, although it has not been my good fortune to meet with it.

EARED DOBCHICK or GREBE, *Podiceps auritus*, Nutt. Man., vol. ii. p. 256.

EARED GREBE, *Podiceps auritus*, Aud. Orn. Biog., vol. v. p. 108.

Adult 13, wing $5\frac{1}{2}$.

Very rare, and not found by me in America.

Adult Male.

Bill shorter than the head, as broad as high at the base, compressed and slightly recurved toward the end; upper mandible with the dorsal line straight and slightly declinate to beyond the nostrils, then direct, but slightly descending toward the tip, the ridge convex, the edge incurved, the tip acute; lower mandible with the angle long and extremely narrow, the dorsal line beyond it ascending and slightly convex, the sides sloping outwards and a little convex, the edges direct, the tip acute. Nostrils linear, basal, rather small, pervious. Gap-line almost straight, being a little recurvate.

Head of moderate size, oblong, compressed; neck long, slender; body depressed. Feet short, large, placed close to the extremity of the body; tibia feathered to within two-twelfths of an inch of the joint; tarsus extremely compressed, its anterior edge with a row of small scutella, the sides with broad scutella, beyond which are some irregular scales, the posterior edge with a double line of small prominent scales; first toe very small, with an inferior membrane, fourth longest; anterior toes scutellate, connected at the base by a membrane, and having on both sides an expanded web-like margin, marked with oblique lines, and having a crenulate edge; claws flat, that of the third toe very broad, obliquely obovate, abrupt.

Plumage very soft. blended, on the lower parts silky, on the back glossy

and rather compact. Feathers on the occiput a little elongated ; a tuft of very long, loose, linear feathers on each side of the head, rising from over and behind the eye, and covering the ears. Wings small, acute ; primaries much curved, the first longest, the second almost equal, the rest rapidly graduated ; secondaries short, rounded. Tail a slight tuft of loose feathers.

Bill black, tinged with blue. Iris blood-red. Feet dusky-grey externally, greenish-grey on the inner side. The tufts on the sides of the head are orange, anteriorly more yellow, posteriorly red ; the head and upper part of the neck are deep black ; the rest of the upper parts brownish-black, the wings greyish-brown, with a broad patch of white, the secondary quills being of that colour. The throat, fore part and sides of the neck are dull black, its lower part with some spots of the same ; the rest of the lower parts glossy silvery-white, excepting the sides of the body and rump, which are light red.

Length to end of tail 13 inches ; bill along the ridge $1\frac{1}{2}$, along the edge of lower mandible $1\frac{1}{2}$; wing from flexure $5\frac{3}{4}$; tarsus $1\frac{6}{8}$; hind toe and claw $\frac{5}{8}$; second toe to the end of the claw $1\frac{3}{4}$; third toe 2 ; fourth toe $2\frac{1}{4}$.

Young in autumn.

In this state the tufts of the head are not developed, and the feathers of the neck are softer. The bill is greyish-blue, dusky above ; the feet as in the adult. The upper parts are brownish-black, the neck tinged with grey behind ; the secondary quills are white ; the throat and a broad band, curving beneath the ear so as almost to meet the other on the nape, greyish-white ; the neck brownish-grey all round at its upper part ; the lower parts silvery-white, the sides of the body and rump tinged with dusky-grey.



2 1838

Red-billed Diver.

1. Male. 2. Female.

Drawn from Nature by J. T. Bowen F.R.S.

Printed & Col'd by J. T. Bowen Philad.

THE PIED-BILLED DOBCHICK.

PODICEPS CAROLINENSIS, *Lath.*

PLATE CCCCLXXXIII.—MALE AND FEMALE.

There go the little Dobchicks, among the tall rushes and aquatic grasses that border the marsh. They have seen me, and now I watch them as they sink gently backwards into the deep water, in the manner of frightened frogs. Cunning things! "Water-witches," as they call you, I clearly see your bills, although you have withdrawn all of you save those parts, and sneak off towards yon great bunch of bulrushes. Well, speed on, and may safety attend you! Nature has granted you means of eluding your enemies, and I am heartily glad to see that you have profited by her instructions. I know you can fly too. How happy must you be, to be thus enabled to migrate through the air, instead of being obliged to labour for months with your curiously scolloped feet, in removing from one country to another, as *authors* say you do. Ah! you have reached a small secluded pool, where you intend to breed in peace and security; there you are, collecting rushes and weeds to form a large matted bed, on which you intend to deposit your pearly eggs. Labour on, mind me not, I am a true friend and admirer of your race. I see that among these plants you have fixed your tenement, in which there will soon be five eggs, which, although tinged with green, will look as if pure white. I wish I knew how many days of constant heat from your bodies it will require to hatch them. Some other time perhaps you may tell me. Miniatures of yourselves I now see swimming gaily, skipping, springing, gliding, dipping, just like yourselves. So, you snatch the crawling bug, and gorge yourselves with leeches, fish, and herbage. How fast your young ones grow, changing from downy to hairy, and again to feathery and silky. On winglets they now cross the clear pool, and crawl on the opposite shore, there enjoying the warmth of the bright sunbeams. September has come; plump and strong seven of you there are; the evening is calm and beautiful; you spread out your wings, reach with some difficulty a proper height, and swift as meteors glide through the air, until, meeting with warmer waters, you alight on them, and there remain for a season.

The Pied-billed Dobchick may be met with in almost every part of the United States, at one season or other: in the south and west during autumn

and winter, in the east and north-west in spring and summer, mostly on fresh waters of all descriptions, yet when these are covered with ice, on bays and estuaries, where it searches for shrimps and fry, although under other circumstances such haunts are not congenial to it. It is found in New Brunswick and Nova Scotia, but I did not meet with it in Labrador or Newfoundland.

* I had the good fortune, on the 28th of June, to stumble upon a nest of this bird near the banks of the Wabash river, above Vincennes. It was large for the bird, raised several inches above the muddy and reedy shores of a pond, only a few feet from the water, and composed of decayed weeds, rushes, and earth. On being discovered, the sitting bird slid over the mud, along a path that led directly to the water, in which it immediately dived, and I saw no more of it for about twenty minutes. The eggs, which were five, measured an inch and a quarter, by seven and a half-eighths, were smooth, rather rounded, and of a light greenish-white colour. On breaking one of them, I found it to contain a chick considerably advanced, which induced me to leave the rest untouched, and before I departed I saw the bird, which I believed to be the female, swimming low at a distance. I watched it for some time, but could not discover another, and walked away to allow it to resume its occupation. The nest was fixed among the stalks of strong reeds, but was not attached to any of them. In the month of August, while on the Cayuga lakes, I saw one of these birds with a brood of young about half grown, but could not obtain a single specimen, as they dived with extreme quickness, and eluded all pursuit.

Few birds plunge with more rapidity than this species, which, during submersion, employs its wings, as I had an opportunity of observing while some were passing under a boat when I was in pursuit of them. On the water it is almost impossible to catch them, unless they have been injured in the wing, when they are unable to dive without difficulty. The curious habit which they have of sinking gradually backward in the water, at the sight of an enemy, is very pleasing to observe. Not a ripple do they leave on the spot where they have disappeared, and one unacquainted with them can hardly conceive that a bird could have escaped in so dexterous a manner. My friend THOMAS MACCULLOCH gave me an account of one which, having been observed on a small mill-dam, was pursued by the miller's sons, who, after chasing it fully an hour, could not even drive it on shore. Their father, however, who was as anxious as themselves to see the curious creature, drained the pond, when the little thing was seen crawling over the mud in a manner not unlike that of a turtle. It was now easily caught, as it was not able to rise on wing, the species, it seems, being incapable of spring-

ing from the ground, and was afterwards given to my young friend, who presented it beautifully prepared to me.

While I was at Philadelphia, my learned and staunch friend the late Dr. RICHARD HARLAN, received two Pied-billed Grebes alive, which had been caught in a fishing-net on Brandywine creek. We placed them in a large tub of water, where we could see all their subaqueous movements. They swam round the sides of the tub in the manner of the Puffin, moving their wings in accordance with their feet, and continued so a much longer time than one could suppose it possible for them to remain under water, coming up to breathe, and plunging again with astonishing celerity. When placed on the carpet, they ran awkwardly half erect, for a distance of a few feet, tumbled over, and scrambled along with the aid of their wings. Nothing could induce them to eat, and after a day or two of captivity, the little creatures were taken to the Delaware, and set at liberty.

This bird retires to rest on the floating beds of rushes met with in ponds, or on the edges of the shores; and in such places you may see it sitting upright, and dressing its plumage in the sunshine. They are extremely unwilling to rise on wing, unless during their migrations, or when chasing each other at the pairing season, which commences in March, when they manifest a good deal of pugnacity. On such occasions, the males fly, dive, and rise again on wing, in the manner of the Foolish Guillemot. While travelling, they pass rapidly through the air, at times at a considerable elevation, when the movements of their wings produce a sound like that of a Hawk stooping on its prey. They are seldom found in parties of more than six or seven. The idea of migrating by water is quite absurd. How long would it take a Dobchick to swim from the mouths of the Mississippi to the head waters of the Ohio; and when arrived there, after six or seven weeks of constant paddling, how is he to proceed farther? Yet it is well known that they breed farther north, and are general on the southern waters early in October.

The food of the Pied-billed Dobchick consists of small fry, plants, seeds, aquatic insects, and snails; along with which they swallow gravel.

They seem to form particular attachments to certain ponds or small lakes, where, until they are closed by ice, you may always observe a pair or a family. Opposite Henderson I regularly saw a couple every autumn, and my friend the Reverend JOHN BACHMAN has observed a group of them for many winters in a small pond a few miles distant from Charleston. They seem to have a dislike to swift-running streams, and when on them keep to the eddies along the shores. The curious double pectination on the hind part of their tarsi, seems to aid them greatly while sitting upright on the broad leaves of water-lilies, on the surface of which I have observed indented

impressions after the birds had plunged into the water from them. The young differ in colour from the adult, but the old males and females resemble each other, only the former are larger.

PODICEPS CAROLINENSIS, Bonap. Syn., p. 418.

PODICEPS CAROLINENSIS, *Pied-bill Grebe*, Swains. and Rich. F. Bor. Amer., vol. ii. p. 412.

PIED-BILL DOBCHICK, *Podiceps carolinensis*, Nutt. Man., vol. ii. p. 259.

PIED-BILL DOBCHICK, *Podiceps carolinensis*, Aud. Orn. Biog., vol. iii. p. 359 ; vol. v. p. 624.

Male, 14, 23.

Extremely common in autumn on all our Western streams, as well as those of the Atlantic Districts. In winter in the Southern States, as far as Texas. Breeds on the Wabash, and other streams of the interior, to Maine. Migratory.

Adult Male.

Bill shorter than the head, stout, deep, compressed, tapering. Upper mandible with the dorsal line nearly straight at the base, curved towards the end, the ridge slightly flattened for a short space at the base, narrow in the rest of its extent, the sides convex towards the end, the edges sharp, inflected, the tip obtuse, a little decurved. Nasal groove broad, and extending beyond the middle of the mandible ; nostrils elliptical, lateral, sub-medial, pervious. Lower mandible with the angle long and narrow, the sides nearly erect, but convex, the dorsal line very short and sloping upwards, the edges inflected, the tips narrow, the gap-line nearly straight.

Head rather small, oblong, compressed; neck rather long; body depressed. Feet placed far behind, short, stout; tibia bare for a very short space below; tarsus short, much compressed, thin before and behind, anteriorly scutellate, on the sides with large scutelliform scales, posteriorly rough, with a double row of very small scales. Hind toe very small and situated high; fourth toe longest, third a little shorter, second much shorter; anterior toes connected by webs, which beyond the second joint are slit and rounded, the outer edges of the second and fourth furnished with broad lobed membranes; the lobes are marked with parallel grooves, directed a little forwards. Claws of fore toes depressed, that of middle toe resembling a human nail.

Plumage blended, on the forehead with stiff enlarged shafts, as in the Rails, on the back shining and rather hard, as well as on the lower part of the neck anteriorly and laterally, on the rest of the lower parts glossy and hair-like. Wings very small; primary quills curved, the second longest, first slightly shorter, third longer than first; secondary short, broad, rounded, the inner elongated and more tapering. Tail a slight tuft of loose feathers.

Bill pale blue, upper mandible dusky along the ridge, and with the lower

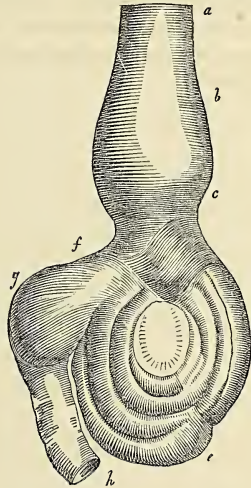
having a black spot beyond the middle. Iris brown. Feet greyish-black. Upper part of the head and the throat black; neck and sides of the head light greyish-brown, the stiff edges of the feathers on the lower part and sides of the neck greyish-yellow; back brownish-black, as are the inner secondaries; the outer light brown, with a reddish-white spot on the end of the inner web; primaries light brown, dusky at the end. The breast is silvery-white, the abdomen brownish-grey, and the sides mottled with the same.

Length to end of tail 14 inches, to end of wings 12, to end of claws 18; extent of wings 23; wing from flexure $4\frac{1}{2}$; bill along the ridge $1\frac{1}{2}$; along the edge of the lower mandible $1\frac{1}{2}$; tarsus $1\frac{1}{2}$; middle toe 2, its claw $\frac{1}{2}$. Weight 15 oz.

Adult Female.

The female wants the black band on the bill; but is in other respects nearly similar to the male. Weight 13 oz.

Male. Mouth 7 twelfths wide; the palate flat, with two longitudinal ridges on each side; the anterior part with three. The tongue is 10 twelfths long, slender, slightly concave above, trigonal, tapering to a thin horny point. Œsophagus 8 inches long, $\frac{1}{2}$ inch in width along the neck. The proventriculus, *b c*, forms a very large sac, as in the other species, 10 twelfths in width; but the stomach, *c d e f*, although still very large, is more muscular in structure, and approaches in character to a true gizzard. It is of an irregularly elliptical form, $1\frac{1}{2}$ inches long, $1\frac{1}{4}$ inches broad; there are distinct lateral muscles 5 twelfths thick, a very prominent inferior muscle, *e*, and large oblong tendons. The epithelium is very thick, dense, tough, with remarkably strong longitudinal rugæ, transversely fissured, and also lining the large pyloric cavity, *f*, which is 8 twelfths in extent. The proventricular glands are exceedingly large, those in the middle being 3 twelfths long, and $\frac{1}{4}$ twelfth broad; they form a belt $1\frac{1}{2}$ inches in breadth. The intestine forms 8 folds, and measures 31 inches in length; its width at the upper part is $3\frac{1}{4}$ twelfths, at the lower 3 twelfths.



The cœca are only 3 twelfths long, and 1 twelfth broad. The cloaca is globular, and of moderate size.

The trachea is 5 inches 10 twelfths long, much flattened; $1\frac{3}{4}$ twelfths in breadth, toward the lower parts 2 twelfths, and lastly contracted to $1\frac{1}{2}$ twelfths; the rings 150. The bronchi differ in this species from the rest in being composed of distinctly separated cartilaginous half rings, 15 in number. The muscles as in the other species.

In another individual, a female, the stomach is of a regularly elliptical form, 1 inch 9 twelfths long, $1\frac{1}{2}$ inches in breadth; the muscular coat of moderate thickness, composed of strong fasciculi; the epithelium thinner and more corrugated. The stomach contains a great quantity of feathers, scales of fishes, numerous elytra of aquatic coleoptera, and a fish 3 inches long, and 11 twelfths in depth.

It is very remarkable, and equally singular, that all the Grebes should have the stomach distended with feathers. These bodies being indigestible, and not the remains of objects devoured, for none of these birds prey upon birds, must be swallowed for the purpose of aiding digestion; but in what manner they accomplish this object is not easily determinable. They may keep the stomach distended by their elasticity, but why should that organ require to be more so than that of the Divers, which live on the same sort of food?

NEW SPECIES.

NOT IN MY SYNOPSIS.

During my journey to the country around and about the waters of the Upper Missouri and Yellow Stone rivers, in the summer and autumn of 1843, my companions and myself had the good fortune of procuring several new species of birds ; and I feel much satisfaction in presenting them to my subscribers, who, I trust, will be gratified to see that my anxiety to please them is not in the least diminished.

In publishing these new species, I have the gratification of naming some of them after those gentlemen who accompanied me on my late tour ; and others, after friends connected with the science of ornithology, publicly or otherwise.

With the exception of a few of these birds, procured in the bottom lands along the Missouri river, they all were found on the sterile prairies, which form the greater portion of the country visited by us ; and generally during our excursions after the buffalo, the elk, or the antelope.

I shall also give figures of two or three species discovered by others, within the range proposed to be included in my synopsis as appertaining to our Fauna. In the accounts given of these new species, the student will be surprised as much as I have myself been, to see how closely allied most of them are to species long since described, not only by me, but even by ALEXANDER WILSON, NUTTALL, and CHARLES LUCIEN BONAPARTE. I have a series of each species now in my possession, which can be seen by any student of ornithology who may desire to examine them.

FAMILY XV.*—FRINGILLINÆ. FINCHES.

GENUS IX.†—FRINGILLA, *Linn.* FINCH.

HARRIS' FINCH.

FRINGILLA HARRISII, *Aud.*

PLATE CCCCLXXXIV.—MALE AND YOUNG.

The discovery of this beautiful bird is due to my excellent and constant friend EDWARD HARRIS, Esq., who accompanied me on my late journey to the Upper Missouri river, &c., and after whom I have named it, as a memento of the grateful feelings I will always entertain towards one ever kind and generous to me.

The first specimen seen, was procured May 4th, 1843, a short distance below the Black Snake Hills. I afterwards had the pleasure of seeing another whilst the steamer Omega was fastened to the shore, and the crew engaged in cutting wood. This was on the west side of the river, at a place lately occupied by Indians engaged in making maple sugar. The country was hilly, the timber large, and the abandoned camp of a party of Indians, proved to us that game was abundant in the neighbourhood, as we saw the remains of Deer, Wild Turkeys, and Pigeons strewed around the hut, where the pots and kettles of these sons of the forest had manufactured the sugar.

As I was on the look-out for novelties, I soon espied one of these Finches, which, starting from the ground only a few feet from me, darted on, and passed through the low tangled brushwood too swiftly for me to shoot on the wing. I saw it alight at a great distance, on the top of a high tree, and my several attempts to approach it, proved ineffectual; it flew from one to another tree-top as I advanced, and at last rose in the air and disappeared. During our journey up the stream my friend HARRIS, however, shot two others, one of which proved a female, and another specimen was procured by Mr. J. G. BELL, who also was one of my party. Upon our return voyage, my friend HARRIS had the good fortune to shoot a young one, supposed to

* See vol. iii. p. 49.

† Ibid p. 138.



W E B

Harris' Finch?

1. Adult Male 2. Young Female.

be a female, near Fort Croghan, on the 5th of October, which I have figured along with a fine male. The female differing in nothing from the latter.

All our exertions to discover the nest of this species were fruitless, and I concluded by thinking that it proceeds further northward to breed.

HARRIS' FINCH, *Fringilla Harrisii*, Aud.

Male $7\frac{1}{2}$, $10\frac{7}{8}$.

Found on the Upper Missouri. Not abundant.

Adult Male.

Bill dusky; head and throat black, descending by streaks of the same colour on the breast. Cheeks and a broad line nearly meeting on the nape, ash-grey; back dull bay, streaked with brownish-black; rump dull olivaceous; edge of wing whitish. Two bands of white on the wings, formed by the tips of the secondary coverts and first row of small coverts. Tail feathers brown, edged with light greyish-olive. Sides of the breast thickly streaked with black dots. The lower parts white, tinged with light brownish-yellow. Legs dusky, the claws darker. Second quill longest.

Bill along the ridge $\frac{1}{2}$ inch, along the gap $\frac{3}{8}$; from bill to pinion $1\frac{1}{8}$; to end of wing 5 inches, to end of claws $6\frac{1}{8}$, to end of tail 7; alar extent $10\frac{7}{8}$; wing from flexure $3\frac{7}{8}$; tarsus $\frac{7}{8}$; middle toe $\frac{5}{8}$, its claw $\frac{1}{4}$; hind toe $2\frac{1}{8}$, its claw $\frac{3}{8}$. Feet cinnamon colour.

Young, supposed to be a Female.

The general appearance is the same as the above, as well as the colouring, except that the upper part of the head is covered with black feathers, each edged with yellowish-brown, as well as the sides of the head. A streak of black descends from the base of the lower mandible, and the upper parts of the breast and sides are thickly streaked with deep brownish-rufous; lower parts as in the adult; measurements the same. The adult female exactly as in the male.

FAMILY XX.*—VIREONINÆ. GREENLETS.

GENUS I.†—VIREO, *Viell.* GREENLET.

BELL'S VIREO OR GREENLET.

VIREO BELLII, *Aud.*

PLATE CCCCLXXXV.—ADULT MALE.

On the same day that Harris' Finch was procured, Mr. J. G. BELL, who, as I have already said, accompanied me in my journey to the Yellow Stone river, &c., shot one of the species which I am now about to describe, and which I have named, it being also a new and hitherto undescribed species, with great pleasure, after Mr. BELL; the more especially as Mr. BELL is himself a person who possesses a good general knowledge of our birds, and was an excellent companion in our not unperilous rambles.

This species, like other Vireos of the smaller class, is usually found in the bottom lands along the shores of the Upper Missouri river, from the neighbourhood of the Black Snake Hills as far as we went up that river; finding it in many instances, whether in the bottom lands, overgrown with low shrubbery, or along the borders of ravines that discharge the water accumulating during the spring meltings of the snows that cover the upper country prairie land. In its habits it is probably more nearly allied to the White-eyed Vireo (*V. noveboracensis*) than to any other; as although it does not possess all the swiftness of movement and quaint look exhibited by that species, still it evinces all the movements usually observable in birds of this family.

We never found its nest, although it doubtless breeds in the countries which we traversed; as on many occasions, and during the very heat of summer we found it as far up the Missouri river as Fort Union, one of the principal and handsomest factories of the American Fur Company

BELL'S VIREO OR GREENLET, *Vireo Bellii*, *Aud.*

* See vol. iv. p. 140.

† *Ibid.*



Bell's Vireo.
Male
Rattle-snake Root.



Sprague's Missouri Lark.
Male.

Drawn from Nature by J. J. Audubon. FRS&LS

Lith. Printed & Col'd by J. T. Bowen Philad^a

$4\frac{1}{8}$, $6\frac{1}{8}$.

Shores and prairies of the Upper Missouri, and probably found on all streams of the Western Territories.

Male.

The upper parts are light greyish-olive, tinged with grey on the head and shoulders. Wings and tail brown, edged with yellowish-olive. The lower parts and sides of the neck tinged with yellow, which increases in depth on the sides, including the inferior tail coverts.

Bill along the ridge $\frac{3}{8}$ inch, along the gap $\frac{1}{2}$, to end of tail $4\frac{1}{8}$ inches; alar extent $6\frac{1}{8}$; wing from flexure $2\frac{1}{4}$; tail $1\frac{3}{4}$. Sides brown. Tarsus $\frac{3}{4}$ inch; middle toe $\frac{3}{8}$, its claw rather more than $\frac{1}{8}$; hind toe $\frac{1}{4}$, its claw $\frac{1}{8}$.

Bill and feet bluish-grey, lower mandible paler. Third quill longest. Female a trifle smaller, but resembling the male in every other respect.

FAMILY XIV.*—ALAUDINÆ. LARKS.

GENUS I.†—ALAUDA, *Linn.* LARK.

SPRAGUE'S MISSOURI LARK.

ALAUDA SPRAGUEII.

PLATE CCCCLXXXVI.—MALE.

The first specimen of this truly interesting Lark, was procured by Mr. ISAAC SPRAGUE, another of my companions, who shot it on the 19th of June, 1843, near Fort Union, Upper Missouri.

On several occasions my friend EDWARD HARRIS sought for these birds on the ground, deceived by the sound of their music, appearing as if issuing from the prairies which they constantly inhabit; and after having travelled to many distant places on the prairie, we at last looked upwards, and there saw several of these beautiful creatures singing in a continuous manner, and soaring at such an elevation, as to render them more or less difficult to

* See vol. iii. p. 43.

† Ibid. p. 44.

discover with the eye, and at times some of them actually disappearing from our sight, in the clear thin air of that country.

On the ground they run prettily, sometimes squatting to observe the movements of the intruder, and at times erecting their body fronting the pursuer. After procuring a good number of them, our anxiety about discovering their nest was relieved by Mr. SPRAGUE, who brought us one containing five eggs; and afterwards we procured several young fully fledged.

On first rising from the ground they fly in so deep and undulating a manner, as almost to preclude their being shot on the wing; and this they continue to do, forming circles increasing in extent until about one hundred yards high, when they begin to sing, and continue to do so for fifteen or twenty minutes at a time, and then suddenly closing their wings, they glide down on the prairie below. We had not been long in chase, ere we discovered that they could be approached much easier by riding after them in a small wagon, and on several excursions we all procured specimens. Sometimes when rising from the ground, as if about to sing, for some forty or fifty yards, they suddenly pitch downwards, alight, and run or squat, as already mentioned.

The nest of this species is placed on the ground and somewhat sunk in it. It is made entirely of fine grasses, circularly arranged, without any lining whatever.

The eggs, which usually are four to five in number, average seven-eighths of an inch in length by five-eighths in breadth, are smooth and dotted minutely all over, giving them a general greyish-purple hue. The young, after being hatched, follow the parents on the ground, and are fed with the smaller seeds of grasses, and gradually with insects, &c. They were already found in loose small flocks of eight to a dozen before we left Fort Union on the 16th of August, and some had begun their migrations southward, as well as many other species of birds.

SPRAGUE'S MISSOURI LARK, *Alauda Spragueii*, Aud.

6, 10 $\frac{1}{2}$.

Found on the prairies near Fort Union. Habits somewhat similar to the European Sky-lark. Abundant.

Adult Male.

All the upper parts are light reddish-brown, streaked with blackish-brown; the fore neck pale yellowish, streaked around the upper part of the breast with elongated brownish-spots. Sides deeper, or nearly reddish-brown. Second primary longest, the first rather longer than the third. Secondaries nearing the end of the primaries to within three and a half eighths of an



Smith's Lark Bunting?
Macle Kale

Drawn from Nature by J. Audubon FRSLS

Lith. Printed & Col'd by J. T. Bowen Philad.

inch ; all the outer veins delicately edged with white. Tail emarginate, two inches and one-eighth in length, with the outer feather on each side white. The second white also, but having a longitudinal line of brownish-black on the inner side reaching nearly the whole length.

Bill along the ridge $\frac{3}{8}$ inch, brownish above, pale below ; along the edge $\frac{5}{8}$, to pinion $1\frac{9}{16}$; wing from flexure $3\frac{1}{8}$; bill to end of tail 6, to end of claws $6\frac{5}{16}$; alar extent $10\frac{1}{4}$; tarsus $\frac{7}{8}$; middle toe $\frac{5}{8}$, its claw $\frac{1}{4}$; hind toe $\frac{1}{2}$, its claw $\frac{1}{2}$. Legs, feet and claws light yellowish flesh-colour, and transparent.

The female is very little smaller and precisely like the male. The young when fully fledged resemble the parents, but have all the upper plumage more distinctly marked.

FAMILY XV.*—FRINGILLINÆ. FINCHES.

GENUS I.†—PLECTROPHANES, *Meyer*. LARK-BUNTING.

SMITH'S LARK-BUNTING.

PLECTROPHANES SMITHI, *Aud.*

PLATE CCCCLXXXVII.—MALE.

This species was discovered by my companions, EDWARD HARRIS and J. G. BELL, during an excursion on the prairies of Illinois, in the vicinity of Edwardsville. Several specimens were procured by those gentlemen, and the following account of its habits has been handed to me by Mr. BELL. He says—

“ We found these birds very abundant on the low prairie, near a lake in Illinois, about seven or eight miles distant from Edwardsville, whilst engaged in shooting Ducks, Geese, and American Snipes. They were generally in large flocks, and when on the ground they at once began to scatter and divide themselves, rendering it difficult for us to kill more than two at one shot ; they run very nimbly, and in a manner resembling that of the Bay-

* See vol. III, p. 49.

† Ibid.

winged Bunting (*Emberiza graminea*), when they arose, which they seldom did until very nearly approached. They utter a sharp *click*, repeated several times in quick succession, and move off with an easy undulating motion for a short distance, and alight very suddenly, like many other birds of this family; seeming to fall as it were perpendicularly for several feet to the ground. They seemed to prefer the spots where the grass was shortest. When a single one arose it would fly a short distance and realight; but if three or four started together, the remainder became alarmed, and the whole flock (sometimes containing several hundreds) would start simultaneously. When in the air they flew in circles to and fro for a few minutes, and again alighted. We could see the white spot on the wing, either when they were on the ground or on the wing.

We could see them much better among the grasses whilst on horseback, and seldom saw them on the wing unless disturbed; and when in the air they kept up a constant chirping or call, somewhat resembling that of the Little Red Poll; and very frequently a couple would separate themselves from the great flock, and would pursue one another as if in play or with the desire to fight, and again return to the main body. It was too early in the season and no nests were found; indeed it is probable that this species removes far to the north to breed.

I have honored this species with the name of my good friend GIDEON B. SMITH, Esq., M. D., of Baltimore, Maryland, who has done much for science in several of its departments.

SMITH'S LARK-BUNTING, *Plectrophanes Smithii*, Aud.

6½.

Prairies of Illinois, &c. Very abundant.

Male in April.

All the upper parts are light dull yellowish-brown, streaked with brownish-black. A medial line on the head, another over the eye, with the cheeks and whole lower parts, of the same dull yellowish-brown as the upper surface, streaked on the breast and along the sides with brownish-black. A large patch of white occupies the pinion of the wing, and the smaller coverts are marked with black surrounded by white, forming a second row of white. All the quills are brownish-black, edged with white or whitish, the second and third quills are longest. Tail as the back and wings, excepting two feathers outside that are white, with a streak of brownish-black on the outer vein, and a broader one of the same colour on the inner; and this is conspicuous when the bird is on the wing. Bill and feet brownish-black, the feet darker as well as the claws. Eyes brown.

Whole length 6½ inches; tail 2½; wing from flexure 3¾; bill along the



Le Conte's Sharp-tailed Bunting.

Male.

ridge $\frac{3}{8}$, along the gap $\frac{1}{2}$; tarsus $\frac{3}{4}$; middle toe $\frac{5}{8}$, its claw $\frac{1}{8}$; hind toe $\frac{3}{8}$, its claw $\frac{1}{8}$.

No difference appears at this season in the sexes.

FAMILY XV.*—FRINGILLINÆ. FINCHES.

GENUS II.†—EMBERIZA, *Linn.* BUNTING.

LE CONTE'S SHARP-TAILED BUNTING.

EMBERIZA LE CONTEII, *Aud.*

PLATE CCCCLXXXVIII.—MALE.

Although we procured several specimens of this pretty little Sharp-tailed Finch, I have at present only one by me, a fine male, however, shot by Mr. J. G. BELL, of New York, on the 24th of May.

At first sight one might easily mistake it for the Henslow Bunting, but on comparing these two species, not only are distinct characters easily observed, but the localities wherein the present species is found are different, as well as its curious notes and general habits of keeping only among the long green slender grasses that here and there happen to grow in patches of less or greater extent along the margins of creeks found in the different parts of the prairies through which we passed, whilst in the pursuit of the buffalo or bison.

So closely does it keep in the coverts which it resorts to, that it is difficult to force it to rise on the wing, when only it can be procured. Its song is sharp, shrill, and of a querulous nature. We never could find its nest or young, and cannot give any further accounts of its habits.

I have named this interesting species after my young friend Doctor LE CONTE, son of Major LE CONTE, so well known among naturalists, and who is, like his father, much attached to the study of natural history.

LE CONTE'S SHARP-TAILED BUNTING, *Emberiza Le Conteii*, *Aud.*

* See vol. iii. p. 49.

† Ibid. p. 58.

$4\frac{5}{8}$.

Upper Missouri prairies. Common.

Male.

Bill much more slender than in *Emberiza Henslowii* (Aud.); first quill the longest, the rest diminishing rapidly. Tail emarginate and rounded, with the feathers acute. Upper parts light yellowish-red, streaked with brownish-black, the margins of the feathers and scapulars pale yellowish-white. Tail feathers dusky, margined with light yellowish. Lower parts, with the cheeks and a broad band over the eyes, fine buff. Medial line yellowish-white. The buff extending to the femorals and along the sides, streaked with brownish-black; throat, neck, and upper parts of the breast without any streaks, and plain buff.

Total length $4\frac{5}{8}$ inches; wing from flexure $2\frac{1}{2}$; first quill longest; tail $1\frac{7}{8}$; bill along the ridge $\frac{3}{4}$, along the edge nearly $\frac{1}{2}$; both mandibles dark blue, lighter along the edges. Eyes brown. Legs, feet and claws, dull flesh colour. Tarsus $\frac{1}{2}$; middle toe $\frac{1}{2}$, its claw $\frac{1}{8}$; hind toe $\frac{3}{4}$, its claw rather more than $\frac{1}{4}$.

FAMILY XVII.*—STURNINÆ. STARLINGS.

GENUS I.†—STURNELLA, Vieill. MEADOW-STARLING.

MISSOURI MEADOW-LARK.

STURNELLA NEGLECTA, Aud.

PLATE CCCCLXXXIX.—MALE.

Although the existence of this species was known to the celebrated explorers of the west, LEWIS and CLARK, during their memorable journey across the Rocky Mountains and to the Pacific, no one has since taken the least notice of it.

These travellers mention it at page 236 of the first volume, edited by PAUL ALLEN, Esq., and revised by ARCHIBALD M'VICAR. They say, on the 21st of June, 1805, "There is also a species of Lark, much resembling the

* See vol. iv. p. 69.

† Ibid.



Missouri Meadow Lark?

Male.

bird called the Old Field Lark, with a yellow breast and a black spot on the croup. * * * * The beak, too, is somewhat larger and more curved, and the notes differ considerably." The expedition was, at the period mentioned, in the neighbourhood of the great Falls of the Missouri.

We found the species quite abundant on our voyage up the Missouri, above Fort Croghan, and its curious notes were first noticed by Mr. J. G. BELL, without which in all probability it would have been mistaken for our common species (*Sturnella Ludoviciana*). When I first saw them, they were among a number of Yellow-headed Troupials, and their notes so much resembled the cries of these birds, that I took them for the notes of the Troupial, and paid no farther attention to them, until I found some of them by themselves, when I was struck with the difference actually existing between the two nearly allied species.

In their flight, manners on the ground, and general habits, nothing different from *S. Ludoviciana* could be observed; but on comparing the Missouri Meadow Lark with specimens of *S. Ludoviciana*, procured near New York, the differences are quite sufficient to warrant me to describe the former as a new and hitherto undescribed species. The bill of the Missouri Meadow Lark is more curved, and considerably narrower, than in the common species, indeed it is scarcely more than one half the breadth of the bill of the latter. The Missouri Lark is also considerably smaller; but the greatest difference is in the form of the tail, which in this species is nearly square, and consequently has the feathers nearly equal, whilst in the common one, the tail is rounded, and the two lateral feathers are nearly *three quarters* of an inch shorter than the middle ones; besides which, the central tail-feathers of the present birds are narrowly barred, and not scalloped on their margins as in *Sturnella Ludoviciana*. The nest is not covered over, and the eggs are considerably smaller, and differently marked. This species is very shy, but abundant on all the prairies; its flesh resembles that of the common bird, and is indifferent eating.

MISSOURI MEADOW-LARK, *Sturnella neglecta*, Aud.

10, 16.

Upper Missouri. Abundant.

Adult Male.

The male measures 10 inches from the point of the bill to the end of the tail, to end of claws $11\frac{1}{4}$; alar extent 16; wing from flexure $4\frac{7}{8}$; tail 3. Third quill longest. Bill along the ridge 1 and nearly $\frac{3}{8}$, along the edge $1\frac{3}{8}$; tarsus $1\frac{5}{8}$; middle toe 1, its claw $\frac{3}{8}$; hind toe $\frac{3}{8}$, its claw $\frac{1}{4}$.

The eggs, which are usually four or five in number, measure $1\frac{1}{8}$ inches in

length, by $\frac{3}{4}$ in breadth, pure white ground. The spots are more bold, larger, and of a brighter reddish colour than those of *S. Ludoviciana*, and are diffused over the whole surface, instead of being crowded toward the larger end, as is the case in the common species. The irides are brownish, and the hairs on the upper eye-lid longer and more numerous. The general colours and markings are much the same in both species, but much paler in the present one.

FAMILY VII.*—MUSCICAPINÆ. FLYCATCHERS.

GENUS II.†—MUSCICAPA, *Linn.* FLYCATCHER.

YELLOW-BELLIED FLYCATCHER.

MUSCICAPA FLAVIVENTRIS, *Baird.*

PLATE CCCCXC.—MALE.

I am indebted to my young friend SPENCER F. BAIRD, Esq., of Carlisle, Pennsylvania, for specimens of this new Flycatcher, which that gentleman and WM. M. BAIRD, Esq., accurately described in Vol. I. of the "Proceedings of the Academy of Natural Sciences of Philadelphia," (July and August 1843, Nos. 28, 29, p. 283,) and from which I have made my figure. The following account of its habits, and also the description of its specific characters, are given by the two gentlemen above indicated.

"This species was first observed in the spring of 1840, near Carlisle, Pennsylvania. During every succeeding spring since, it has been seen in greater or less numbers, and several specimens procured each year. Its habits are much like those of the other species of this genus; it frequents low thickets near small streams, is seldom found in large woods like *T. acadica* or *T. virens*, and is a very unsuspicious bird, allowing persons to approach within a short distance. It probably goes farther north than Pennsylvania to breed, having never been observed after the latter part of May or beginning of June."

* See vol. i. p. 195.

† Ibid. p. 198.



Yellow-bellied Flycatcher.

Male.

YELLOW-BELLIED FLYCATCHER, *Tyrannula flaviventris*, Baird.

5 inches 4 lines, 8 inches 8 lines.

Pennsylvania. Probably found in the Allegheny Mountains and Middle Districts.

Male.

"Body rather stout. Bill broad and the sides convex. Tarsus longer than the middle toe. Wings rounded ; third primary longest, fourth slightly shorter, second one line shorter than the third and two lines longer than the fifth, first shorter than the fifth, but longer than the sixth. Tail emarginate and slightly rounded.

"Bill above dark blackish-brown, beneath light yellowish-brown. Feet brownish-black. Plumage of the upper parts deep greenish-olive, crown of the head rather darker, the feathers having their centres dark brown. A narrow ring around the eye pale yellow. Lower tail coverts, abdomen, and linings of the wings, bright sulphur-yellow, deepest on the abdomen. Sides of the body, fore part of the breast, and sides of the neck, olive, lighter than the back, and inclining to yellowish on the throat. Primaries and tail feathers dark brown, the former bordered with greyish, and the latter with olive, like the back. The lower row of lesser wing coverts, and the secondary coverts darker, tipped with pale yellow, that colour forming two bands across the wing. Secondaries darker than the primaries, and edged with pale yellow.

"Length 5 inches 4 lines ; extent 8 inches 8 lines ; folded wing 2 inches 9 lines.

"The sexes are similar in colour, but the *female* is generally rather smaller.

"*Observations.* This strongly marked species will at once be distinguished from every other by the deep yellow of its under parts. It resembles *T. acadica* of GMELIN (*querula* of WILSON) somewhat in form, but *acadica* by comparison will be found to be a larger bird, lighter olive above, and very pale yellow beneath. The tail of *acadica* is even or slightly rounded, in this species emarginate.

"We have no specimen of *T. pusilla* of SWAINSON, but upon comparison with the description in SWAINSON and RICHARDSON'S 'Zoology of North America,' (so favourably known for accuracy,) it appears to differ in the colour of the upper parts, *pusilla* being 'intermediate between hair-brown and oil-green;' our species is of a decided olive green ; the front of *pusilla* is 'hoary;' in our species dark brownish-olive ; the bands on the wing greyish-white ; in our species pale yellow ; 'throat and breast' of *T. pusilla* 'pale ash-grey;' in this species the throat is yellow, and the breast olive tinged with yellow."

FAMILY VII.*—MUSCICAPINÆ. FLYCATCHERS.

GENUS II.†—MUSCICAPA, *Linn.* FLYCATCHER.

LEAST FLYCATCHER.

MUSCICAPA MINIMA, *Baird.*PLATE CCCCXCI.—*MALE.*

A specimen of this little Flycatcher was sent to me along with the one last described, by Mr. BAIRD, and I have found his description of it so correct that I shall give it below. Mr. BAIRD says :

"This species was first observed and procured in May 1839, near Carlisle, Pennsylvania. Since then numbers have been observed and shot on every succeeding spring. Like the preceding, (*T. flaviventris*.) this bird does not frequent deep forests, but is found among the scattering trees which border our streams. It is rather shyer than *T. flaviventris*, and does not, like that species, seek dense thickets. It also most probably goes further north to breed, as after the last of May it is no longer to be seen. It visits us from the south in the latter part of April, generally making its appearance about a week before *T. flaviventris*."

This Flycatcher has a great range through the countries bordering upon the Upper Missouri. Several specimens were procured by some of my companions, and I not unfrequently met with them in my rambles along the sides of small though interesting valleys in the ravines so numerous about the Yellow Stone river and Fort Union. In its habits it resembles the smaller species allied to itself, all of which have been already described. I have no doubt that it breeds in the sections of the country where I saw it but its nest escaped our utmost endeavours to discover it.

LEAST FLYCATCHER, *Tyrannula minima*, Baird.

5 inches 2 lines, 8 inches 3 lines.

* See vol. i. p. 195.

† Ibid. p. 198.



Least Flycatcher.
Male.

Mountains of Pennsylvania. Shores of the Missouri. Probably ranges over all the Middle and Western Districts.

Male.

"Body rather slender. Bill smaller than the other species of the genus. Tarsus slightly longer than the middle toe. Second primary longest, third nearly equal, and rather longer than fourth, fifth one line shorter than fourth, first intermediate between fifth and sixth. Tail emarginate and slightly rounded.

"*Colour.* Bill dark blackish-brown above, pale horn-colour beneath. Feet black. Plumage of the upper parts dark greyish-olive, crown somewhat darker, rump lighter and inclining to greyish. A narrow ring round the eye greyish-white. Fore part of breast, sides, and sides of the neck light ash-grey, middle of throat white, rest of the lower parts very pale yellow or yellowish-white. Primaries and tail feathers wood-brown, the former narrowly, and the latter broadly edged with olive. Lower row of lesser wing coverts and the secondary coverts darker, tipped with dirty-white, that colour forming two bands across the wings. Secondaries also dark, like the greater wing coverts, and broadly edged with yellowish-white.

Length 5 inches 2 lines. Extent 8 inches 3 lines. Folded wing 24 inches.

"No perceptible difference as to colour or size between the sexes.

"*Observations.* This species will be recognized by its size, its slender form making it the smallest of our North American Tyrannulæ. In colour it most resembles *T. Traillii* of AUD., but it is a much smaller bird, being nearly three-fourths of an inch shorter. *T. Traillii* has the breast and sides of the neck olivaceous; in this species light ash-grey; the tail also of *T. Traillii* is even.

"It differs from *T. pusilla* (comparing with the description of SWAINSON and RICHARDSON as before) in having the wings more pointed, the second and third primaries being longest, and the first longer than the sixth; while in *pusilla* the third and fourth are longest, and the first shorter than the sixth. The upper tail coverts of *pusilla* are uniform in colour with the back; in our species lighter; *pusilla* has the front 'hoary'; in this species dark. The lower parts of *pusilla* are pale sulphur-yellow, 'approaching to siskin-geen'; in our species yellowish-white; the under mandible of *pusilla* is yellowish-brown; of this species horn-colour. From the figure in the Fauna Boreali-Americana, *pusilla* appears to be a stouter bird, much deeper in colour beneath and having a broader bill. Its smaller size, and darker colour above, will distinguish it from *T. acadica* (being two-thirds of an inch shorter), which species has also longer and more pointed wings, a much larger bill, which is light brown beneath, and an even tail."

FAMILY XVI.*—AGELAINÆ. MARSH-BLACKBIRDS.

GENUS V.†—QUISCALUS, *Vieill.* CROW-BLACKBIRD.

B R E W E R ' S B L A C K B I R D .

QUISCALUS BREWERII, *Aud.*

PLATE CCCCXCII.—MALE.

The country around Fort Union, which is situated a few miles above the confluence of the Yellow Stone river and the Missouri, consists of a large naked prairie, bounded to the eastward by a range of singular hills, both in their form and diversity of altitude. This prairie, like all others in that section of the country, is somewhat sterile, covered with a superabundance of cactus of at least two kinds, and becomes burnt and dried as early as the beginning of August. The hills themselves are more or less abrupt, stony, and yet covered with many curious species of plants. These hills extend for several miles, at about the same distance from the banks of the Missouri; along their tops or their declivities, many rare species of birds are found during spring and summer; but more are met with on the surface of the great prairie below. At moderate distances are seen more or less extensive ravines, where a few scanty dwarfish trees, and tall rough weeds or grasses, are found along the margins of the small and mostly dried up rivulets that meander through them. Reader, it is along the banks of these streamlets, and perhaps on the branches of the trees which I have mentioned, that Brewer's Blackbird may be found during almost all the morning rambles of the student of Nature. Groups of seven or eight are seen to alight on the branches in a loose manner, and in silence. They soon move upward or downward, and allow you to approach within some fifteen or twenty paces of them; and uttering their notes whilst you are watching their movements, you are at once assured that it is a species as yet unknown to the naturalists of our country, and therefore procure several of them in a few moments.

They do not evince the pertness so usually accompanying our other birds of this family, but look all the while as if unsatisfied with their present abode

* See vol. iv. p. 49.

† Ibid. p. 51.



Brewer's Black bird

Male.

and longing for a farther removal northward. On the ground their gait is easy and brisk, and I never heard them sing, but simply emit a *cluck* not unlike that of the Common Red-winged Starling, between which and *Quiscalus ferrugineus* I would place them. Their bill is not so stout as that of the former, but more so than that of the latter. The shape of the wings and tail of this species differ materially from those of the Rusty Grackle; the first by its being longer, sharper, and having the first quill longest, and the tail being much more rounded. In the general colour those two species might agree better; but in the *Q. Brewerii*, the metallic resplendence is uniformly more brilliant, purple and blue, instead of being steel blue and green; it never shows the brownish edges of the feathers that are regularly attendant on those of the Rusty Grackle.

I think it almost superfluous to add that I have named this species after my friend THOMAS M. BREWER, Esq.; having so often mentioned his name when he was actively engaged in the study of ornithology, and my works containing numerous evidences of the assistance he has rendered both to science and to myself.

BREWER'S BLACKBIRD, *Quiscalus Brewerii*, Aud.

10, 16½.

Found on the Upper Missouri river, and Yellow Stone, &c.

The old male measures from the point of the bill to end of tail 10 inches; alar extent 16½; wing from flexure 5½; bill along the ridge ¾, along the gap ¾. The first quill is decidedly the longest, the second and third shorter, and the rest rapidly decreasing. The bill and feet black, irides pale yellow. Tarsus 1½; hind toe ½, its claw ⅔; middle toe ¾, its claw ¼.

The general colour is deep glossy black, with rich purple reflections on the head, cheeks and lower sides of the neck; after which the reflections are first blue, and afterwards green. The lower parts are slightly glossed with green. Tail 4 inches.

The female is somewhat smaller and duller in all its tints. Bill to end of tail 9½ inches; wing from flexure 4¾.

FAMILY XV.*—FRINGILLINÆ. FINCHES.

GENUS II.†—EMBERIZA, *Linn.* BUNTING.

SHATTUCK'S BUNTING.

EMBERIZA SHATTUCKII, *Aud.*

PLATE CCCCXIII.—MALE.

This handsome little species is found quite abundant throughout the country bordering on the Upper Missouri. It inhabits with particular partiality the small valleys found here and there along the numerous ravines running from the interior, and between such hills as I have already mentioned. Its usual demeanour resembles much that of the Chipping Bunting, *Emberiza socialis* of WILSON, and like it, it spends much of its time in singing its monotonous ditties; whilst its mate is engaged in the pleasing task of incubation. When approached it will dive and conceal itself either amid the low bushes around, or will seek a large cluster or patch of wild roses, so abundant in that section of country, and the fragrance of which will reach the olfactory nerve of the traveller or gunner for many paces.

The nest of the Shattuck Bunting is usually placed on a small horizontal branch, seven or eight feet from the ground; and I believe is occasionally placed in the broken and hollow branches of trees. The eggs, four or five in number, are blue, spotted with reddish-brown toward the large end, and placed in a nest so slightly formed of slender grasses, circularly lined with horse or cattle hair, as to resemble as much as possible the nest of the species to which it is allied.

I have great pleasure in naming this species after my worthy young friend GEORGE C. SHATTUCK, Esq., M.D., of Boston, one of the amiable gentlemen who accompanied me on my voyage to the coast of Labrador.

SHATTUCK'S BUNTING, *Emberiza Shattuckii*, *Aud.*

$5\frac{9}{16}$, $8\frac{1}{16}$.

* See vol. iii. p. 49.

† *Ibid.* p. 53.



Shattucks Bunting?

Male.



Missouri Red-moustached Woodpecker.

Male.

Abundant throughout the country bordering the Upper Missouri.

In the male, the bill is cinnamon colour, darker towards the extremities, the lower mandible lighter. A medial line and a collar passing back of the head and running behind the cheeks, light bluish-grey; a line over the eyes, another running from the lower mandible and the throat, white. Cheeks, rest of the head, and upper parts of the back, dull yellowish-brown streaked with brownish-black. Rump greyish-brown without streaks; two bands of pale yellowish on the wings. The second primary longest. Wings brownish, edged with whitish or pale dull yellow. Tail dull brown, the feathers edged with paler. Sides dull yellowish-brown, the middle of the lower parts much lighter. A small streak of blackish runs from the lower corner of the inferior mandible, legs and feet cinnamon colour.

From point of bill to end of tail $5\frac{9}{16}$ inches; alar extent $8\frac{1}{8}$; wing from flexure $2\frac{7}{8}$; tail $2\frac{3}{8}$; tarsus nearly $\frac{5}{8}$. Eye brown.

FAMILY XXVI.*—PICINÆ. WOODPECKERS.

GENUS I.†—PICUS, *Linn.* WOODPECKER.

MISSOURI RED-MOUSTACHED WOODPECKER.

PICUS AYRESII, *Aud.*

PLATE CCCXCIV.—MALE.

This handsome new species was first discovered in the woody borders along the shores of the Upper Missouri, near Fort Union, and both my friends HARRIS and BELL procured several specimens, including an adult pair. Mr. BELL also discovered its nest-hole, and on having it cut down, we found six young birds of this species already fledged, and having the red moustache of the old male.

Although this bird is considerably larger than the *Picus auratus*, so common in our Eastern States, its flight and general habits are much the

* See vol. iv. p. 211.

† Ibid. p. 212.

same, but there exists some difference in its notes. The bill is considerably less curved, and the markings, though much like those of the latter, differ in the rounded spots that ornament the lower part of the body, are much less in size, and incline downward, instead of being placed crossways; and although the *third* quill is the longest in both, in the present species, the first is much shorter.

I have named this handsome bird after my young and learned friend W. O. AYRES, Esq., who is well known to science as an excellent ichthyologist; and who also is well conversant with the birds of our country.

MISSOURI RED-MOUSTACHED WOODPECKER, *Picus Ayresii*, Aud.

12½, 20.

Valleys and ravines of the prairies of the Upper Missouri.

In the Adult Male, the upper part of the head, cheeks, throat downward to near the black patch, of an iron-grey tinged with reddish-buff; lores and around the eye brighter; a transverse very narrow band of carmine on the hind neck; back, scapulars, and secondaries light reddish-brown, tinged with dull green, transversely spotted with black; rump white; tail coverts white, with black markings; primaries and tail feathers blackish-brown, the shafts yellow. A red moustache or streak on each side of the throat from the edge of the lower mandible; lower parts reddish-white, and spotted with black, as well as a large semilunar patch on the fore part of the breast; lower surface of quills and tail feathers yellow, the latter black toward the end.

The female is similar to the male, somewhat smaller, but without the red patch or moustache on the sides of the throat.

Bill to end of tail $12\frac{7}{8}$ inches; alar extent 20; wing from flexure $6\frac{6}{8}$; bill along the ridge $1\frac{1}{2}$, along the edge rather more than $1\frac{1}{2}$; tarsus $1\frac{1}{2}$; middle toe 1, its claw $\frac{1}{2}$; hind toe $\frac{3}{4}$, its claw $\frac{3}{8}$; tail $4\frac{1}{2}$.



Nuthatch's Whip-poor-will.

Male.

Drawn from Nature by J. J. Audubon FRSLS

Lab. Printed & Col'd by J. T. Bowen Philad.

FAMILY IV.*—CAPRIMULGINÆ. GOAT-SUCKERS.

GENUS I.†—CAPRIMULGUS, *Linn.* GOAT-SUCKER.

NUTTALL'S WHIP-POOR-WILL.

CAPRIMULGUS NUTTALLII, *Aud.*

PLATE CCCCXV.—MALE.

How little did I think whilst at Edinburgh, in the year 1839, that I would have found and procured Nuttall's Whip-poor-will, in the course of my rambles on the Upper Missouri, in the year 1843. At the former date I gave an intimation of the existence of such a bird in my fifth volume of Ornithological Biographies, at page 335, to which you, reader, may refer if you please.

On Thursday the 7th of September, 1843, we were forced to land our boat on the eastern side of the Missouri river, on account of the wind, which at that time blew too high for us to proceed; for, reader, whenever the wind is strong, the waters of the Missouri become at once ruffled, and the navigation by no means secure. We halted at a place where we thought we could spend the time in hunting, with some advantage, and the moment our Mackinaw boat was tied to the trees on the shore, each man, bearing a gun, sallied forth in search of such game as I was anxious to procure. Elks were abundant, and we saw a great number of them; some were snapped at within a few paces, others were shot at at considerable distances; but Mr. CULBERTSON, (the superintendent of Fort Union, who accompanied us as far as Fort Pierre, and his Indian wife and young son who were of the party,) had the good fortune to shoot and kill a fine young male, of which I will speak elsewhere. The woods were thickly matted and difficult of ingress; some went up the river, whilst others followed a contrary course; some Sharp-tailed Grouse were started, shot at, and brought to our camp. In the course of the night the wind blew so violently, that all on board resorted to the shore, Mrs. CULBERTSON leaping first on shore with her babe in her arms,

* See vol. i. p. 150.

† Ibid.

when she in a few moments found a shelter of willow branches, &c., under which both remained until the storm had subsided.

The next morning the wind was still blowing too hard for us to proceed, and as on the former day, the hunters went off in many directions. Mr. J. G. BELL, on his return from a walk up the river shore, where he had shot some Wild Pigeons, started the individual now before you from the ground. It flew a few yards, and my young companion took it for our common Whip-poor-will; but on its second rising and flying again before him, he saw that it was a much smaller bird, fired at it, and fortunately brought it to me, fresh and beautiful though dead.

On the evening of the next day, about ten o'clock, my friend HARRIS called me to hear the notes of this bird. We had removed to an island a mile or so below where the Whip-poor-will had been procured; and on ascending the bank and entering the dried, rank grass of the prairie, the notes of the birds came at once on our ears, for there were two of them, both anxiously desirous, one might have thought, to convey to us all that they could perform in lieu of a song. The sounds we heard, were indeed those of a Whip-poor-will, but short of much of their compounds, for it was reduced to the syllables *Oh-will, Oh-will, Oh-will*, repeated often and as quickly as is the fashion of our own common species.

Those Birds were then on their passage southward, and I regret to say that nothing can now be added to their habits. I am also sorry that no specimens of the female were seen or procured.

This pretty species I have, as you perceive, named after my friend THOMAS NUTTALL, whose worth as a man and a scientific naturalist, are both so well known.

NUTTALL'S WHIP-POOR-WILL, *Coprimulgus Nuttallii*, Aud.

74.

Prairies of Western Missouri, and the Northern territories.

Adult Male.

Bill black, iris dark hazel. Feet reddish-purple, the scales and claws darker. The general colour of the upper parts is dark brownish-grey, lighter on the head and medial tail feathers, which extend beyond the others half an inch, and all of which are streaked and minutely sprinkled with brownish-black and ash-grey. The quills and coverts are dull cinnamon colour, spotted in bars with brownish-black; the tips of the former mottled with light and dark brown. Three lateral tail feathers barred with dark brown and cinnamon, and tipped with white. Throat brown, annulated with black, a band of white across the fore neck; beneath the latter black mixed



The Texan Turtle Dove?

Male.

with bars of light yellowish-grey and black lines; under tail coverts dull yellow.

Total length $7\frac{1}{4}$ inches; bill along the edge $\frac{7}{8}$; wing from flexure $5\frac{3}{4}$. Second quill longest, third almost equal. Tail to the end of the upper feathers $3\frac{1}{2}$; tarsus $\frac{5}{8}$; middle toe $\frac{3}{8}$, its claw $\frac{1}{4}$. Strongly pectinated.

FAMILY XXIX.*—COLUMBINÆ. PIGEONS.

GENUS I.†—COLUMBA, *Linn.* DOVE.

TEXAN TURTLE-DOVE.

COLUMBA TRUDEAUII, *Aud.*

PLATE CCCXCVI.—MALE.

I am indebted for this new species to my companion Mr. J. G. BELL, who received it from Texas; but, unfortunately, no notes connected with the habits of this handsome Dove were forwarded by the person who procured it.

In naming it after my excellent friend Doctor TRUDEAU, of New York, I only pay another very slight tribute to his great attainments as an accomplished ornithologist and student of nature.

TEXAN TURTLE-DOVE, *Columba Trudeauii*, Aud.

10½.

One specimen, procured in Texas.

Male.

Upper part of the head and neck purplish, with rich reflections of golden-green on the hind parts; a black spot on the sides of the throat, and bill black; throat and neck purplish-buff; sides and under wing coverts ash-grey, as well as the lower tail coverts; vent white; shoulders, back and two middle tail feathers, brownish-olive; a large patch of white formed by the first row

* See vol. iv. p. 311.

† Ibid. p. 312.

of small coverts, and several of those adjoining. Primary quills brownish-black edged with white, secondaries much darker and more broadly edged and terminated by white; tail feathers light blue, with a narrow band of black, terminating in a broad white band. Third quill longest, the first and second nearly equal.

Total length about $10\frac{1}{2}$ inches; wing from flexure $6\frac{1}{4}$; bill along the ridge $\frac{5}{8}$, along the edge 1; tarsus 1; middle toe 1, its claw $\frac{2}{3}$; hind toe $\frac{5}{8}$, its claw $\frac{1}{4}$; the tail, which is slightly rounded, measures $4\frac{1}{2}$. The female remains unknown.

FAMILY XIV.*—ALAUDINÆ. LARKS.

GENUS I.†—ALAUDA, Linn. LARK.

WESTERN SHORE LARK.

ALAUDA RUFA, Lath.

PLATE CCCCXVII.—MALE.

Here, reader, is another of those species which, by its general habits as well as appearance, I did not notice until this moment; afraid, indeed, of promulgating an error myself before the world of naturalists that exist, and who do not excuse an error, unless indeed that error is committed by themselves. Now, however, that years have elapsed, and that in the meantime I have had ample opportunities of watching this species, and of comparing it with our *Alauda alpestris*, I have not hesitated to figure it, and present it to you as a good species, not hitherto placed in my works on the ornithology of our country.

This species is quite common on all the western prairies which I lately visited, and is also found in Texas, as well as in several portions of South America. It breeds on the prairies, forming its nest somewhat imbedded in the ground, and raises only one brood in a season. As I have already said,

* See vol. iii. p. 43.

† Ibid. p. 44.



Western Shore Lark.

Drawn from Nature by J. Audubon FRSLS

Male.

Lith. Printed & Col'd by J. T. Bowen Philad'a

in all its habits, its manner of flight, &c., it resembles the *Alpestris*. It differs, however, materially from the latter, by its smaller size, and by having the whole of its tail feathers of the same dark colour, unlike, in that particular, its relative, which has the two middle ones of the same light colour as the coverts of that part.

WESTERN SHORE LARK, *Alauda rufa*, Lath.

ALAUDA FLAVA, Gmel.

LA CEINTURE DE PRETRE, *Petite aloutte de Buenos Ayres*, Buffon, Pl. Enl. 650, fig. 2.

5½.

Western States, and generally distributed.

Male with two erectile pointed tufts of feathers on the anterior lateral parts of the head. Upper parts dusky-brown, the feathers paler on the edges; on the forehead a recurved crescentic band of black; another curved downwards, proceeding on its side from the base of the upper mandible; a band of white on the eye; throat pale yellow, with a broad black patch on the lower neck, the rest of the lower parts brownish-white; quills dusky. tail feathers blackish.

Total length about 5½ inches; wing from flexure 4. Second quill longest. Bill along the ridge $\frac{3}{4}$, along the edge $\frac{1}{2}$; tarsus $\frac{3}{4}$; middle toe $\frac{1}{2}$, its claw $\frac{1}{4}$; hind toe $\frac{1}{4}$, its claw $\frac{3}{8}$. Bill, feet and claws, black, irides hazel.

The female is somewhat smaller, but is marked as in the male. The lateral tail feathers of the latter are edged outwardly with dull white.

The eggs, four or five in number, measure $\frac{7}{8}$ of an inch in length by $\frac{5}{8}$ in breadth. The ground colour is light blue, freckled all over with light umber spots, so thickly concentrated towards the larger end as entirely to conceal the general colour.

FAMILY XXXIX.*—ANATINÆ. DUCKS.

GENUS V.†—FULIGULA. SEA-DUCK.

COMMON AMERICAN SCAUP DUCK.

FULIGULA MARILA.

PLATE CCCCXCVIII.—MALE AND FEMALE.

It is extremely curious that none of the authors who have written on the ornithology of our country, should have discovered that, independent of the subject which forms this article, another species of Scaup Duck also exists, and that abundantly too, throughout the United States.

ALEXANDER WILSON figured a Scaup Duck, but in his description of the adult in winter, he says that the "irides" are "reddish," and yet he says that the Scaup Duck is well known in England. Until about two years since, I thought that I had given the history of the Common Scaup Duck, but find now that I have been mistaken, and that all that I have said of "*Fuligula Marila*,"‡ must now be applied to *Fuligula mariloides* of VIGORS. The bird which has been described in my Ornithological Biographies, and figured in my large plates, being in fact the *Fuligula mariloides* of VIGORS, who described from a specimen procured during BEECHEY's voyage. In a note to page 31, Doctor RICHARDSON, who found this latter species, speaks of it as being smaller, but does not point out any specific differences between the two birds; and to WILLIAM YARRELL, Esq., of London, is now due the knowledge of this species, which he has characterized and described in such a manner as to render it for ever a good and true species, differing from the *Fuligula Marila* in size, being considerably smaller than the latter, the form of its bill, the colouring of the terminal feathers of the head, &c. &c.

About two years ago, my attention was called to notice the typical Scaup Duck, by Mr. JOHN G. BELL, of whom I have already spoken, when I

* See vol. vi. p. 167.

† Ibid. p. 198.

‡ See vol. vi. p. 316.



Common Scaup Duck.

Drawn from Nature by J. Audubon FRSGS

1. Male. 2. Female.

Let. Printed & Col'd by J. T. Bowen Philad.

plainly saw the difference between the two species, but could not figure the typical Scaup Duck at the time. I believe, however, that it was described by Mr. GIRAUD, whose paper was read by himself before the members of the Lyceum of Natural History of New York. I do not know whether or not Mr. GIRAUD gave a new name to this species, and it does not signify, as it is now well established by Mr. YARRELL of London, as above stated, that it is the *Fuligula Marila*, and that our smaller species is the *Fuligula mariloides* of VIGORS.

Mr. BELL has kindly sent me specimens in the flesh, and fresh, from which I have figured the male and female, and taken very exact measurements, weight, &c. Mr. VIGORS, in speaking of these two species, says: "Several specimens of a bird nearly allied, if not the same, were brought home by the expedition. They uniformly differ from the typical *Fuligula Marila* in their smaller size; in the black colour on the breast being less intense and defined; in the undulating white markings being less diffused over the scapulars and back, and being wanting almost entirely on the wing-coverts."

COMMON AMERICAN SCAUP DUCK, *Fuligula Marila*.

18 $\frac{3}{8}$, 32.

Shores of Long Island, and generally distributed.

Adult Male in January.

In this species the bill is narrower at the base than at top by nearly one-third. It is of a pale blue colour, the unguis rather large, hooked at the point and black. The irides bright yellow; the whole head and neck, as well as the upper part of the breast and back, black; cheeks and sides of neck glossed with rich reflections of green, the rest of the back and scapulars striped in zigzag and well divided lines of black on a white ground; wing-coverts darker grey than the back; primaries brownish-black; the secondaries white, forming the speculum, and tipped with black narrowly edged with white. Rump and upper tail-coverts black; tail feathers brownish-black; breast, sides below the wing, and the flanks, pure white; the belly behind the legs undulated with greyish lines on a dull whitish ground; legs and toes bluish-black, the membranes darker.

Bill along the ridge 2 $\frac{1}{4}$ inches, along the edge 2, to pinion 10 $\frac{1}{2}$, to end of claws 20 $\frac{3}{8}$; flexure of wing 8 $\frac{1}{4}$; bill to end of tail 18 $\frac{3}{8}$; alar extent 32; claws beyond the tail 2 $\frac{1}{2}$. First quill longest. Tail of 14 feathers 2 $\frac{3}{8}$ in length. Weight 2 pounds avoirdupois.

The Female is somewhat smaller, the head and neck dark brown, the bill as in the male, as well as the irides; around the base of the bill a broad band

of white ; the lower part of the neck and breast dark brown, the back and scapulars light grey, transversely barred with irregular dusky lines ; the primaries dark brown ; the secondaries white, tipped with brown ; legs and feet as in the male.

FAMILY XVI.*—AGELAINÆ. MARSH-BLACKBIRDS.

GENUS IV.†—ICTERUS, *Bris.* HANGNEST.

COMMON TROUPIAL.

ICTERUS VULGARIS, *Daud.*

PLATE CCCCLXCIX.—MALE.

This handsome bird was first observed at Charleston, South Carolina, by my son, JOHN WOODHOUSE, who shot and figured a male the size of nature ; the bird when first seen was perched on the point of a lightning-rod close by the house of my friend the Reverend JOHN BACHMAN, D. D. A few days afterwards others were seen, but although a female was shot, it fell in the river and was lost. I am informed that since that period, small groups of four or half a dozen make their appearance in the same city, and on the neighbouring islands. It is a common species in almost every portion of South America, where, according to DAUDIN, they associate in large flocks, and build a large pensile nest. This bird is very easily tamed, and becomes so gentle as to suffer itself to be handled by its master. The sharpness of their bill, however, renders them somewhat disagreeable as pets, for in many instances they have been known to inflict severe wounds, especially on children.

COMMON TROUPIAL, *Icterus vulgaris*, Daudin.

COMMON TROUPIAL, *Coracias xanthornus*, Scopoli.

COMMON TROUPIAL, *Yellow and Black Pye*, Catesby. (Appendix.)

* See vol. iv. p. 9.

† Ibid. p. 36.



Common Troupial.

Male.

COMMON TROUPIAL, *Banana Bird*, Albin. Ave. II. tom. 40.

COMMON TROUPIAL, *Le Troupiale vulgaire*, Buffon, Pl. Enl. 532.

10, 12 $\frac{3}{4}$.

Observed occasionally at and near Charleston, S. C. Common in South America.

Male.

Total length 10 inches; alar extent 12 $\frac{3}{4}$. Bill, a patch of skin around the eye and reaching the edge of the upper mandible, as well as the legs and feet, blue. Eyes bright yellow, inclining to silvery; claws black. The whole head, neck and upper breast, as well as the back, scapulars, and primary quills, jet black, with bluish reflections on the head. Rump, upper and lower tail-coverts, as well as the whole under part of the body, and a collar around the neck, as well as a patch on the wings, black; pinion of a bright yellowish-orange colour; tail even and black. The secondary coverts largely tipped, and the quills margined with white, forming a very conspicuous patch of that colour; second quill longest. Wing from flexure 4 $\frac{1}{2}$ inches; bill along the ridge 1 $\frac{1}{2}$, along the edge rather more than 1 $\frac{1}{2}$; tarsus $\frac{1}{2}$; hind toe $\frac{1}{2}$, its claw $\frac{1}{2}$; middle toe 1, its claw $\frac{2}{3}$. Tarsus and feet, as well as the claws, strong and well adapted to their habits.

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FAMILY XV.*—FRINGILLINÆ. FINCHES.

GENUS II.†—EMBERIZA, *Linn.* BUNTING.

BAIRD'S BUNTING.

EMBERIZA BAIRDII, *Aud.*

PLATE D.—ADULT MALE.

During one of our Buffalo hunts, on the 26th July, 1843, we happened to pass along several wet places, closely overgrown by a kind of slender rush-like grass, from which we heard the notes of this species, and which we thought were produced by Marsh Wrens, (*Troglodytes palustris*,) and my friends HARRIS and JOHN G. BELL immediately went in search of the birds. Mr. BELL soon discovered that the notes of Baird's Bunting were softer and more prolonged than those of the Marsh Wren. They had much difficulty in raising them from the close and rather long grass, to which this species appears to confine itself; several times Mr. BELL nearly trod on some of them, before the birds would take to wing, and they almost instantaneously re-alighted within a few steps, and then ran like mice through the grass. After awhile, however, two were shot on the wing, and both fortunately were found, and proved to be an adult male and female. We found this species abundant in all such situations as I have mentioned above, and doubtless it breeds in them.

I have named this species after my young friend SPENCER F. BAIRD, of Carlisle, Pennsylvania.

BAIRD'S BUNTING, *Emberiza Bairdii*, Aud.

Wet portions of the prairies of the Upper Missouri.

Male.

Bill stout and longish; wings rather long and broad, the second quill the

* See vol. iii. p. 49.

† Ibid. p. 58.



Bairds Bunting.

Male.

Drawn from Nature by J. Audubon. ERSKIN.

Printed & Col'd by J. T. Bowen. Philad^a

longest, and the four first nearly equal; tail emarginate and rounded, with the feathers acute. Upper parts light yellowish-brown, streaked with brownish-black; the margins of the feathers on the back and scapulars slightly tinged with light reddish-cream colour, the edge of the wing paler, as well as those of the tail feathers. A broad streak of reddish-cream colour on the centre of the head, surrounded by rows of blackish-brown, as well as a line from the corner of the lower mandible; a semilunar line of spots and streaks of the same on the upper part of the breast and sides of the body. Legs and feet very stout and rather long, claws long, slender, curved, and acute. Bill horn colour toward the tip and dull yellow; cheeks and all under parts pale dull yellowish-white.

Bill along the ridge $\frac{1}{2}$ inch, along the edge $\frac{3}{8}$; wing from flexure 2 inches and $\frac{3}{4}$; tail $2\frac{1}{8}$; tarsus $\frac{7}{8}$; hind toe $\frac{3}{8}$, its claw $\frac{3}{8}$; middle toe $\frac{5}{8}$, its claw $\frac{1}{4}$. The whole light flesh colour and transparent, eye hazel.

THE END.

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